

# The Chemical Age

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## Notes and Comments

### Chemical Trade Conditions Abroad

ECONOMIC conditions in various overseas countries have been the subject of a number of reports recently issued by the Department of Overseas Trade, a selection of which are summarised in other pages of this issue. All the reports indicate that the conditions which have prevailed in Great Britain during the past twelve months have been shared to a greater or less extent by other countries, but a closer perusal of the reports reveals a decided indication that the crisis is past and that a measure of recovery is in sight. Mr. F. W. Field, Senior Trade Commissioner for Canada and Newfoundland, reports that industrial production in Canada reached its peak in June, 1929, and then came the beginning of the serious situation which has since faced the world. The history of the Dominion, however, inspires faith in its power to overcome the obstacles which bar its best progress, and there appears, he says, an attractive avenue, scarcely explored, for co-operation between the units of the Empire in their mutual interests and for a combined attack on their present problems.

Canada, which holds seventh position among the world's chemical producers, is largely dependent on foreign markets for the disposal of its products, and as a result has keenly felt the decreased purchasing power of its customers. In addition to the declining trend of general business, Canadian industry has had to contend with the confusion resulting from numerous adjustments of its foreign exchange relationships. There has been a substantial reduction of imports, and, although there was an unfavourable balance last autumn, exports were greater in volume than imports during the closing months of the year. Mr. Field expresses the view that Canada is destined to become one of the Empire's most important producers of chemicals. At present the industry is centred mainly in Ontario and Quebec, where there are over 480 establishments, while the other provinces are responsible for about a hundred plants.

### Belgium Weathering the Storm

TURNING to the report on economic conditions in Belgium, we find that according to Mr. N. S. Reyntiens, the Commercial Secretary to the British Embassy at Brussels, that country, although not unscathed, has so far weathered the economic and financial tempest in a manner which some of its neighbours might well envy, and there seems no reason to doubt that it will eventually ride out of the storm with its usual tenacity. So far, Belgium is firmly wedded

to the gold standard and the metallic cover of its currency is far greater than that required by law, representing no less than 67 per cent. of the National Bank's sight engagements, instead of the legal minimum of 40 per cent., expressed either in gold or gold securities. Imports from the United Kingdom show a decline of 618,000 tons and Belgian exports to the United Kingdom have declined, though chemical products and rubber goods have shown an increase. Values have decreased all round, but the export trade seems to have suffered proportionately less than that of most other exporting countries.

The report states that it is too early to gauge, from the available official statistics, the effect on trade with the United Kingdom of the depreciation of the pound, although there are indications in several trades that the diminishing external purchasing power of British currency will react unfavourably upon the export of textiles, glass and pottery and agricultural produce. The Runciman duties will naturally also restrict imports of commodities affected by these measures, as Belgian goods represent 10 per cent. of the total value of these imports. Plate glass works have only worked to 40 per cent. of their capacity. The table glass industry was severely affected by the fall of the pound, as contracts were usually made on a sterling basis, and by the Runciman duties, as the United Kingdom market absorbs 40 to 50 per cent. of the total exports. Similar difficulties were experienced in the chemical and building materials industries, and the cement branch has been particularly affected by the United States tariff, exports to that country dropping by no less than 145,000 tons as compared with 1929.

### A New Campaign for National Economy

THE launching this week at a great demonstration in the City of London of a new campaign for national economy has not come a moment too soon. The highest taxing Budget ever presented to the British Parliament in times of peace was accepted with marvellous stoicism as a grim necessity. The taxpayer could hardly be enthusiastic about it, but he was at least relieved to find that for the first time since the war a Government had been found to take the strictest possible line with the national accounts. Mr. Chamberlain resolutely declined to indulge in any of the legerdemain and make-believe of his immediate predecessors as Chancellor of the Exchequer, and was properly accorded a heartier vote of thanks than any of those who had taken the primrose path with the idea common to all political parties

of placating the democracy. There was, however, one serious omission from the Budget statement. The best friends of the National Government were chilled, not by any thought of new sacrifices which they would be called upon to bear, but by the absence of any but the most hazy generalisation on the subject of national economy.

Mr. Chamberlain himself has since warned the bankers that the Government may yet have to anticipate savings more drastic than any that can be effected merely by paring down this or that item in the expenses of the various Departments. Other Ministers have spoken in the same vein, and Mr. Ormsby-Gore, a member of the Cabinet, now declares that so far from the financial and economic crisis which led to the formation of a non-party Government being over, the nation is about to enter a phase of it even more difficult and acute than any it has yet experienced. The business man knows well enough that the long hoped for recovery is not yet. What he does not know is the actual day-to-day effect of the stagnant world position on the national revenue. Ministers who have access to this information have obviously made up their minds to the development of a new situation which will soon be demanding new remedies.

### Action Needed Now

It is too early to predict a second Budget for the present financial year following Lord Snowden's unhappy precedent in 1931. Such a contingency, however, becomes more likely every day. Mr. Chamberlain did not rule it out in his Budget speech last month and another Minister, Sir Donald Maclean, has more recently hinted that such a prospect has at least occurred to his mind. It will be remembered that Mr. Chamberlain budgeted for a small surplus, and it is unthinkable that Great Britain should ever again run the risk of an unbalanced Budget. His prospect of a surplus at all was only made possible by some new taxation over and above the pile laid on the taxpayer's back last autumn and by a financial estimate of the yield of income tax and surtax which was widely regarded at the time as optimistic beyond the facts then disclosed. The patent risk which the Government and its chief instrument, the Treasury, are running is that the revenue from direct taxation at the end of the present financial year will prove to be substantially lower than the April estimate. Mr. Chamberlain allowed for a reduction in the yield of direct taxation of £38,000,000. If that estimate is not borne out by the figures, every million by which the total is decreased will add a corresponding cubit to the deficit which could not then be avoided.

That would be the position if the estimates are not realised and the other figures in the national balance sheet remains the same. It is at this point that the Friends of Economy step in and give the individual citizen the opportunity of throwing his weight into the scale. There is a way of balancing the Budget even in this most difficult of all years, even if the direct taxpayer fails to find the amount expected of him. It is the way which has had to be practised by every individual taxpayer during this exceptional period of contraction—the way of economy. The job will have to be tackled before the world gets much deeper

into the bog. The Friends of Economy call for action now rather than at an unspecified period when the position has become dangerously worse. Their new campaign can be accepted not as any challenge to the Government but as a raising of the standard which Ministers will assuredly soon take from their hands.

### The Patents Amendment Bill

THE Bill which has been introduced into the House of Lords with the object of Amending the Patents and Designs Acts of 1907 to 1928, will, in due course, come before the House of Commons, when some of the proposed amendments will have to be very carefully watched in the interests of would-be patentees. Commenting upon this matter, "The Inventor," the organ of the Institute of Patentees, expresses the opinion that if the amendments proposed are meant to simplify the proceedings necessary for obtaining patents, certain proposals in the Bill will have just the opposite effect. For instance, some inventors disclose their invention publicly immediately after the provisional protection, but such a disclosure, if the application be post-dated will, under the new proviso relative to provisional protection, render the patent invalid. Post-dating might be avoided if the inventor proved to the satisfaction of the Comptroller that the details or modifications introduced into the complete specification were known to him and in his possession at the date of the filing of the provisional specifications, but were not included because of the directions contained in Section 2, Sub-section 1 of the old Act. The official search as to novelty is still to be confined to printed British specifications published within fifty years before the date of the application for patent, but no provisions are made in the Bill for the gathering of the documents revealed by the search to render them available either to the examiner or to the Comptroller, and it is certain that any document brought forward will raise controversy. By prolonging the period of provisional protection from nine to twelve months, the date of acceptance from fifteen to eighteen months, and the date of sealing from eighteen to twenty-one months it should also be noted that the time at which an inventor can commence proceedings for infringement is considerably delayed.

A change of particular interest to applicants for letters patent is that the stamp fee payable when a complete specification is filed is to be increased *after Provisional*, from £3 to £4, and *with* the application, to £5. In this respect British inventors are being unfairly treated. In Germany the Government fee is £2 14s.; in France, £2 18s.; in Italy, £3 6s. 8d., plus 1s. 1d. per sheet over ten sheets; Belgium, 7s.; United States, £10 plus 8s. per claim over twenty; Canada, £7; Australia, £10. In the United States there are no renewal fees; in Great Britain the total fees for the life of a patent are £131. In America and Germany a very full search is provided through the world's specifications and technical journals; in Great Britain only a search through British specifications for fifty years. It is difficult to understand why the stamp fee should be raised, as the Patent Office is showing a substantial annual profit. In 1930 its profit was £154,545, and in the previous year £157,005. Under the Bill the inventor will get nothing in addition for the extra £1. As a taxpayer, however, the inventor is only having a little additional burden to bear.

## The Problem of Fluctuating Steam Demand

### Functions and Advantages of the Steam Accumulator

This article, based on information supplied by Ruths International Accumulators, Ltd., of London, deals with the problem of a fluctuating demand for steam and the economic results to be attained by the installation of a steam storage system. It is of particular interest to works engaged in textile dyeing, soap manufacture, food processing and other industries where steam is used mainly for boiling or cooking operations.

IN the majority of the heat-consuming industries the demand for steam fluctuates widely from moment to moment, due to the bringing into operation of different processes without any time incidence in relation to each other. In a dye works, for example, the dye vats are operated independently of each other, while the process in each is made of up two distinct operations, the boiling up of the vat, during which large quantities of steam are required, followed by the dyeing process itself, during which only sufficient steam is required to counteract radiation loss. With a large number of dye vats

control. If the process is speeded up, the operation should be gradual and at a rate consistent with the maintenance of high thermal efficiency. Apart from this, the process of heat transfer in the boiler and the production of steam is a relatively sluggish process ill-adapted to respond to the fluctuating requirements of the manufacturing units. The result is two-fold. In the first place, steam pressure variations occur throughout the factory, lowering the efficiency of the manufacturing units and causing a slowing up of production, and, secondly, the boiler house staff waste time and energy in attempting to meet a steam demand the magnitude of which cannot be anticipated from moment to moment with boiler plant incapable of making the necessary response. Properly considered, every steam-using industrial process is a combination of two distinct processes—the manufacture of steam and the manufacture of one finished product or another. To connect these two inseparably is to handicap both, for the dyer or the candlemaker illogically controls the boiler house efficiency, and the fireman with equal lack of logic controls the output of the manufacturing end of the plant.

#### Fluctuating Steam Demand

The inevitable result of attempting to carry a fluctuating steam demand with ordinary boiler equipment is that the steam pressure varies throughout the factory. The first effect of a sudden draw of steam by any one consumer or any one department is to cause a local drop in pressure. This is transmitted through the pipe system right back to the boiler house, causing a drop of steam pressure throughout the entire system. The boilers do not immediately respond to the extra steam demand made upon them, and as the flow of steam to the consumer is a function of the pressure difference between

the consumer and the supply main, general steam shortage occurs. To counteract this, the operatives in the various departments open the steam valves under their control, causing a still greater demand for steam, thus aggravating the difficulties in the boiler house.

Meanwhile, the boiler house staff have observed the drop in pressure and attempt to recover it by the speeding up of combustion, the opening up of dampers and the closing down of feed valves; all this without reference to its effect upon the efficiency of the boiler plant. With the recovery of the boiler pressure the process is reversed, and the rate of evaporation reduced to prevent excessive loss through the safety valves.

Fluctuating steam pressure not only affects the efficiency of the steam generating plant; it affects also the efficiency of

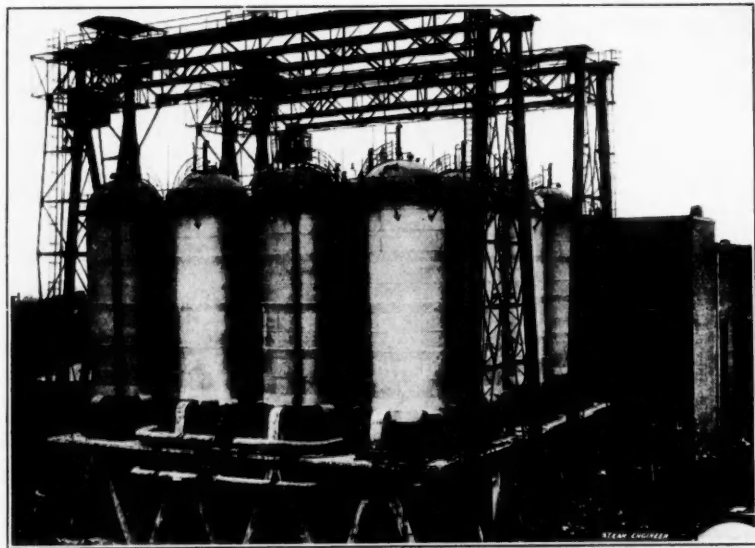


Fig. 1. Ruths Steam Accumulators at Charlottenburg

operated intermittently it will be understood that the steam demand fluctuates with great rapidity and over a wide range. In a soap-works the process of soap boiling as a whole may occupy several days, but from the standpoint of heat consumption it consists of a series of distinct and separate processes, each requiring steam at a different time rate. Apart from this, irregularities in the steam demand are caused by the simultaneous starting and stopping of soap pans. Similar conditions obtain in sugar refineries, pulp and paper mills, and wherever steam is utilised for boiling or cooking operations.

In these industries, and many others not specifically mentioned, the steam demand is marked by peaks of large magnitude and wide diversity of character, developing and falling off with great rapidity. At one moment the steam demand may be only 50 per cent. of the average demand, and within a few minutes it may have increased to 50 per cent. above the average demand. The peaks may last only a few minutes or they may extend over a period of an hour or more. To meet such conditions with any standard form of boiler is to meet them indifferently. The steam generator, of whatever type, is essentially limited in its capacity to meet peak loads, not only in regard to their actual magnitude, but also in regard to the time rate at which they develop and fall off. The combustion process itself is a process which, to be efficient, should be conducted at a perfectly constant rate and under the closest possible

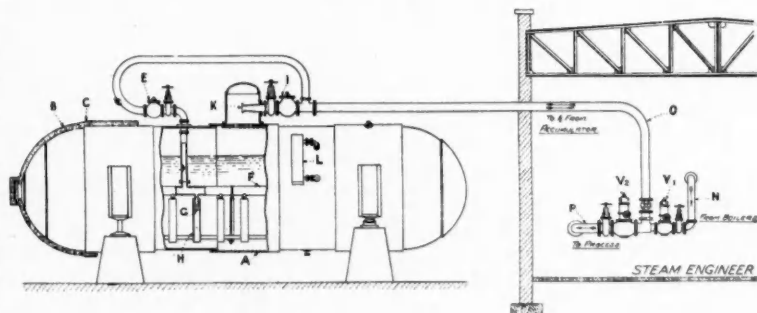


Fig. 2. Details of Ruths Steam Accumulator



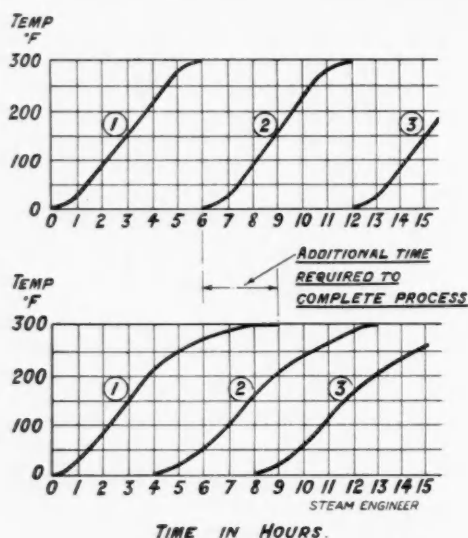


Fig. 3

the steam mains, as drop in pressure and increase in specific volume is accompanied by a considerable increase in energy loss throughout the pipe system per unit of heat supplied to the consumers. If the pressure in the pipe is allowed to drop, the density diminishes, and the loss of pressure along the main must be proportionately increased if the rate of flow is to be maintained. For example, if the flow of steam through a 6 in. main is 6,000 lb. per hour at a mean pressure of 20 lb. per sq. in., the loss of head would be 2 lb. per sq. in. in an equivalent length of about 600 ft. If, due to the occurrence of a peak load the mean pressure falls to 10 lb. per sq. in. the loss of head for the same rate of flow would be approximately 2½ lb. per sq. in. This is equivalent to increasing the length of the main by approximately 230 ft. or nearly 40 per cent.

#### A Typical Industrial Example

The condition of affairs obtaining in those industries where boiling or cooking operations are involved is illustrated diagrammatically in Fig. 3, three steam consumers being represented, supplied with steam from a common main at 150 lb. per sq. in. Suppose consumer 1 is on the line and that the process in the consumer is proceeding normally; suppose, further, that consumer 2 has been closed down for recharging, while consumer 3 is just being brought into operation. Since everything is cold in consumer 3, the bringing of it into commission causes a sudden demand for steam, with the result that the pressure in the supply main drops, and, therefore, the quantity of steam and the rate of heat transfer to consumer 1, and also to consumer 3, are considerably reduced. As the flow of steam is proportional to the square root of the pressure difference between the supply main and the consumer, the effect of pressure drop on steam flow is greater than is indicated by the gauge. Thus a 10 per cent. drop of pressure in the supply main, i.e., to 135 lb. per sq. in. would mean a 16 per cent. reduction in steam flow.

If it were possible to bring in the various consumers en echelon, as illustrated in Fig. 3 (upper chart) in which the process in No. 1 is completed before No. 2 is brought on the line, and so on, it is obvious that the time taken for the complete cycle in each consumer would be a minimum. This method of operation is, of course, quite impracticable, and it is usual to start up the various consumers without any time incidence in relation to each other,

as illustrated in Fig. 3 (lower chart). If, under the latter conditions, consumer 2 is started up, say, four hours after No. 1 has been brought on the line, then, at that stage in the process, the rate of heat transfer in No. 1 consumer will be reduced, due to drop of steam pressure in the supply main, and the same thing will occur both in No. 1 and No. 2 when consumer 3 is started up. The net result of this is that instead of taking, say, six hours, the operation will require say, nine hours to complete. The interference effect of one consumer with another, in this instance, would thus be equivalent to a reduction in output of the order of 33 per cent.

#### Steam Economy in the Dye House

The operations in a dye house are of very great interest from the point of view of steam storage as the process takes place in two stages—the boiling up of the vats and the dyeing operation proper. The first stage in the process is, in a sense, non-productive and should therefore be carried out as quickly as possible, but in the majority of dye-works the load is such a fluctuating one and the competition for steam so keen that the boiling up is unduly protracted with considerable loss of output. Conditions are aggravated by the fact that during the boiling up of the vat the steam demand is considerably greater than during the dyeing operation itself when only sufficient steam is required to counteract radiation loss. If steps are taken to control the steam pressure by the provision of a thermal storage system, competition for steam is entirely eliminated, with a considerable gain in the output of the works, and a reduction in steam consumption per unit of output.

In Fig. 5 the conditions indicated may be taken to correspond to those obtaining in the operation of a dye vat where an unrestricted supply of steam is available. Under these circumstances it is assumed that the boiling up period occupies 40 minutes, during which steam is utilised at the rate of 550 lb. per hour, while the dyeing operation proper occupies 60 minutes, during which the steam demand is at the rate of 200 lb. per hour. If, due to the competition of other vats, steam is available only at the rate of 400 lb. per hour, as shown in Fig. 6, the boiling up process will occupy 60 minutes and the whole operation 120 minutes instead of 100. This corresponds to a loss of output of approximately 16 per cent. In addition to this, as the unproductive part of the process is unduly prolonged, radiation loss is needlessly increased. In the case in point the increase in the total steam consumption due to steam shortage is of the order of 6 per cent. Figs. 5 and 6 are based upon actual experience of the effect of steam pressure variations in a dye-works and the deductions made may be taken as closely representing the handicap under which the majority of such works operate where reliance is placed upon ordinary boiler plant to meet what is invariably a particularly difficult steam demand.

Where the steam demand fluctuates widely there is another point worthy of mention, namely, that rapid changes in boiler pressure may cause excessive priming and the carrying over of water with steam. In this way considerable loss may result due to the flooding of dye vats and the spilling of dye.

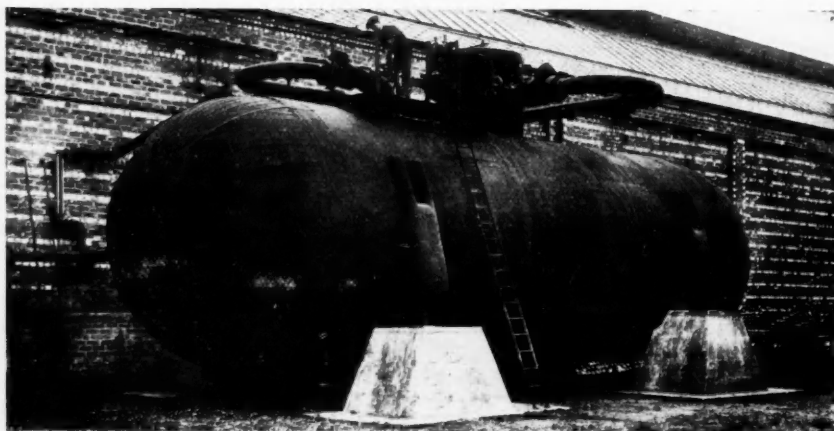


Fig. 4. Ruth's Steam Storage System as installed at the works of Scottish Dyes Ltd.





Fig. 5

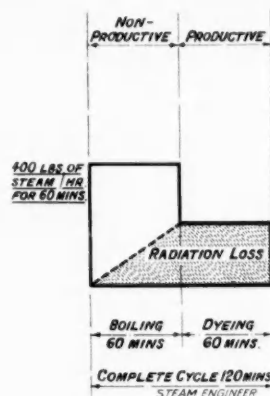


Fig. 6

The same thing occurs in soap boiling and other operations of a like nature.

In the majority of industrial plants steam is utilised partly at boiler pressure for the generation of power, and partly at a lower pressure for the carrying out of certain operations in which the use of high pressure steam would be either wasteful or detrimental to the technical process involved. In sugar refining, for example, the sugar boiling pans and evaporators usually operate at a pressure of 30 to 40 lb. per sq. in., although pressures considerably higher and pressures considerably lower than this are in use in certain refineries. In dye-works, the modern tendency is to use steam at the lowest possible pressure, purely as a matter of economy, and pressures not exceeding 20 to 30 lb. per sq. in. are now almost universal. Soap boiling operations are usually conducted with steam at 60 to 80 lb. per sq. in., while in candle making the process pressure is generally about 20 to 30 lb. per sq. in.

#### The Ruths Steam Accumulator

In those industries where steam is employed at more than one pressure it is usually practicable, by the installation of a steam accumulator, to effect a complete balance between the rate of demand for steam and the rate at which it is generated. In this particular field of thermal storage there is only one system in general use—the Ruths steam storage system, and in what follows the attempt will be made to describe its method of construction and its mode of operation. As indicated in Fig. 2, the Ruths steam accumulator consists of a large cylindrical steel vessel with hemispherical ends, mounted on bearings which allow of expansion and contraction in every direction, and suitable insulated to prevent

undue thermal loss by radiation. The storage vessel is filled to about 90 per cent. of its total capacity with water, which is utilised as the storage medium. The steam accumulator is coupled to the steam distribution system in the works by a single pipe connection O while the automatic control valves  $V_1$  and  $V_2$  take the place of the reducing valve usually employed between the boiler main and the process main. The valve  $V_1$  is a surplus valve, the opening of which is controlled by a pressure impulse taken from the boiler main. It passes all surplus steam into the pipe connection between it and valve  $V_2$ . The latter is an automatic reducing valve, the opening of which is controlled by the pressure in the process main. If, at any moment, the boilers are generating steam in excess of what is required by the manufacturing units, the valve  $V_1$  opens wider, and the pressure in the pipe connection O rises. This causes the closure of the non-return valve I and the opening of the non-return valve E on the accumulator, and steam passes to the internal steam distribution pipe F, and so through the mixing nozzles G.

The steam entering the accumulator condenses, causing the pressure in the vessel and the temperature of the water to rise. This process of charging continues as is encountered on the high pressure main, the boiler pressure tends to drop and the valve  $V_1$  correspondingly closes. This causes the pressure in the inter-connecting pipe O to fall, closing the non-return valve E and opening the non-return valve I. Following upon this the pressure in the steam space of the accumulator drops and steam is formed by re-evaporation of part of the water content of the accumulator to meet the needs of the low pressure consumers. Discharge of the accumulator continues under a falling pressure as long as the peak load condition lasts. If the peak load occurs on the low pressure main, the pressure in this tends to drop, causing the valve  $V_2$  to open further, resulting in the discharge of the accumulator as before, while if a peak load is encountered simultaneously on the high pressure and low pressure steam mains, the valves  $V_1$  and  $V_2$  automatically distribute the demand as between the boilers and the accumulator so as to maintain a constant pressure both on the high pressure and low pressure steam supply systems, independent of the nature of the demand.

The storage capacity of the accumulator is usually equivalent to 30 to 60 minutes total boiler load. It will be appreciated, however, that the size of the accumulator is necessarily determined, in any particular case, by the magnitude of the fluctuations in steam demand, so that, independent of the shape or character of the peak loads, it is possible to design a steam accumulator which will completely stabilise conditions and eliminate the handicap of peak load firing. The Ruths steam accumulator shown in Fig. 4 is installed at the works of Scottish Dyes, Ltd., Grangemouth. It is capable of storing 10,000 lb. of steam over a pressure range of 100 to 50 lb. per sq. in. The shell is 12 ft. 7½ in. diameter and 43 ft. 9 in. long, and has a total volume of 4,950 cu. ft.

## President-Elect of the Society of Chemical Industry

### Nomination of Dr. R. H. Pickard

It was announced on Monday last that Dr. Robert Howson Pickard, F.R.S., had been nominated for election as president of the Society of Chemical Industry, in succession to Professor G. T. Morgan, whose term of office expires at the annual meeting of the Society at Nottingham in July next. Dr. Pickard, who is 58 years of age, is a director of the Shirley Institute of the British Cotton Industry Research Association, having succeeded the late Dr. A. W. Crossley in that office in 1927. He was educated at King Edward's School, Camp Hill, Mason University College and the University of Munich, and is a graduate of the University of London (D.Sc.), of the University of Munich (Ph.D.) and of the University of Birmingham (B.Sc.). He was elected a Fellow of the Royal Society in 1917.

Dr. Pickard went to Manchester from the Battersea Polytechnic, of which institution he was principal from 1920 to 1927. In addition to the heavy responsibilities of that post, he acted as director of research for the British Leather Manufacturers' Research Association. He has served on the Coun-

cils of the British Launderers' Research Association and the Boot and Shoe Research Association, and on the Adhesives Committee of the Department of Scientific and Industrial Research. Besides being a senator of the University of London, a recognised teacher of organic chemistry there and a member of its Standing Committee of Convocation, Dr. Pickard has acted as occasional examiner for higher degrees at the Universities of St. Andrews and Birmingham. He has served as a nominee of the President of the Board of Education on the examination board of the City and Guilds of London Institute, as well as on the board of examiners of the Institute of Chemistry.

Dr. Pickard was formerly head of the chemical department of the Blackburn Municipal Technical College from 1890 until his appointment as principal of the college in 1905, a post which he held for fifteen years. He has also served on the Council of the Textile Institute at Manchester. He was chairman of the Manchester Section of the Society of Chemical Industry from 1929 to 1931.

## The Chemical Industry and Trade of Canada

### Its Influence on Imports from the United Kingdom

ACCORDING to a recent report of the Department of Overseas Trade ("Economic Conditions in Canada, 1931," H.M. Stationery Office, price 4s. 6d. net) Canada seems destined to become one of the Empire's most important producers of chemicals. The industry is centred mainly in Ontario and Quebec, where there are over 480 establishments. The other provinces are responsible for about 100 plants. Figures are not available for 1931, but in the previous year the value of the Canadian output of chemicals was \$122½\* millions. The figures for the same year give a good idea of the distribution of the industry's by-products. For statistical purposes, the chemical industry has been divided into 15 main groups and in 1930 only two of these groups showed a higher production value than in the previous year. The fertilisers industry, covering those concerns engaged chiefly in the manufacture of mixed fertilisers, showed a gain of 12 per cent. to \$2,514,305 and adhesives increased 5 per cent. to \$1,930,012. The paint industry which, from point of value, was the most important of the chemical group, declined 9 per cent. to \$24,739,078; acids, alkalies and salts dropped 30 per cent. to \$19,607,383; medicinal and pharmaceutical preparations showed a reduction of 4 per cent. to \$18,368,176; soaps and washing compounds, 5 per cent. to \$18,240,829; explosives, ammunition and fireworks, 10 per cent. to \$9,731,945, and the miscellaneous group, 12 per cent. to \$8,540,615. The toilet preparations group declined 5 per cent. to \$4,238,429; coal tar distillation, 12 per cent. to \$3,334,067; compressed gases, 10 per cent. to \$3,567,486; inks, 15 per cent. to \$2,579,010; flavouring extracts, 5 per cent. to \$1,711,819; wood distillation, 13 per cent. to \$1,457,042; and polishes and dressings 4 per cent. to \$1,306,656.

#### Recent Industrial Developments

The general trend of the industry during 1931 followed that of 1930, but several important developments have occurred. For instance, the production of sulphuric acid from smelter fumes has been established. Plants have been brought into production by the Consolidated Mining and Smelting Co., at Trail, B.C., and by Canadian Industries, Ltd., at Copper Cliff, Ontario. These are serving to utilise a portion of the sulphur dioxide otherwise going to waste in the atmosphere, in place of imported sulphur hitherto required. The Freeman pyrites burner has also been developed and is successfully handling Canadian sulphide ores as a source of sulphur for sulphuric acid manufacture. The manufacture of sodium acid sulphate (or nitre cake) as a primary product was commenced at Copper Cliff in 1930 to fulfil the requirements of the International Nickel Co. and utilises the natural deposits of normal sodium sulphate from Saskatchewan and sulphuric acid made from smelter fumes. Formerly the product was almost entirely imported from the United States.

Plants for the fixation of atmospheric nitrogen have been brought into production at the Sandwich plant of Canadian Industries, Ltd., and more recently at the Trail plant of the Consolidated Mining and Smelting Co. This marks the first synthetic ammonia production in Canada. The same firm have undertaken the oxidation of this ammonia to nitric acid at a plant erected at Beloeil, Que., and this replaces an equivalent amount of Chile nitrate of soda. The Consolidated Mining and Smelting Co. employs its ammonia for the production of ammonium sulphate and ammonium phosphate. The coal tar distillation plant of the Dominion Tar and Chemical Co. has recently started production at Toronto of phenol and cresol; phenol, largely used in the manufacture of bakelite, has hitherto been imported. The manufacture of superphosphate for fertilisers has been undertaken on a large scale during 1930-31. Plants for this purpose and for the production of mixed fertilisers are now operating at the factories of Canadian Industries, Ltd., at Beloeil, Que., Hamilton, Ont., and at the works of the Consolidated Mining and Smelting Co., at Trail, B.C.

Shawinigan Chemicals, Ltd., have undertaken, upon a manufacturing scale, the production of polymerised vinyl acetate which marks an important contribution by Canada

in the field of synthetic resins. Similarly, the manufacture of resins for use in protective coatings of various kinds, has been well established by the Paint and Varnish Division of the Canadian Industries, Ltd., in Toronto. The Shawinigan Co.'s research department is now working on several new esters which it is hoped may find application in the nitro-cellulose lacquer industry. During the past year they continued to sell their acetic acid for use in the manufacture of cellulose acetate silk, for acetates used in the manufacture of lacquers and for use in the textile industry. The acetylene black is being sold to the dry battery industry, to the rubber trade and also for liquid oxygen explosives. Other relatively new products of the company are amyl acetate, ethyl acetate, butyl acetate, and butyl alcohol.

From these statistics it will be seen that the Canadian manufacturers are gradually reducing imports and supplying a greater share of their home markets requirements. Taking the latest figures for a complete year (1930) the imports of chemicals into Canada totalled \$36½ millions. About 65 per cent. or \$23,961,296 were from the United States, 13 per cent. or \$4,708,121 from the United Kingdom, 10 per cent. from Germany, 4 per cent. from France, 3 per cent. from the Netherlands, 2 per cent. from Belgium, 1.5 per cent. from Chile, and the remaining 1.5 per cent. from other countries. Of the total exports of \$16,320,506, over 55 per cent. or \$9,003,346 was sold to the United States and 20 per cent. or \$3,331,632 to the United Kingdom.

#### Pharmaceutical Chemicals and Preparations

The market in Canada for pharmaceutical and medicinal chemicals is comparatively limited and is bitterly competitive. United Kingdom houses must be prepared to sell at Canadian competitive figures. The four firms particularly engaged in this business, two of which manufacture in Canada, have old-established connections in Germany and on the Continent generally. It seems difficult for United Kingdom houses to meet this condition, especially since Clause "B" of the customs declaration necessitates the finished value to be 50 per cent. British. A large proportion of pharmaceutical chemicals originating in the United Kingdom is made from foreign raw materials which constitute the larger percentage of the value. Examples are quicksilver in quicksilver salts and iodine in iodides. Hence the United Kingdom maker has to pay the general rates of duty and does not benefit from the preferential tariff rates as he would do were the declaration to allow for the use of foreign raw materials. To succeed in the Canadian market, United Kingdom manufacturers must be prepared to carry complete stocks and to sell from stock to Canadian currency at Canadian prices.

The Canadian production of pharmaceutical preparations is valued at from about \$15 millions to \$20 millions annually. Nearly 150 establishments are engaged in the industry and of these over 120 are in Ontario and Quebec. The production in 1930, the latest year for which official figures are available, shows patent medicines and proprietary preparations to a total of \$6,990,000; medicated wines, \$202,000; pharmaceutical preparations, \$5,729,000; other products, \$4,846,000. The last-named item includes toilet preparations, tooth paste, flavouring extracts, dental supplies, biological preparations, insulin, insecticides, confectionery citrates, mercurials, and other commodities which were made as minor products by the manufacturers of medicinal and pharmaceutical preparations.

#### Imports of Drugs

Imports of drugs, medicinal and pharmaceutical preparations during the fiscal year ended March, 1931, were valued at \$3,802,000, of which the United Kingdom supplied \$818,000 and the United States \$2,053,000. The United Kingdom's largest trade is in medicinal, chemical and pharmaceutical preparations, including drug preparations, amounting in the year noted to \$582,907. A similar group, but including liquid preparations, accounted for \$61,806 of United Kingdom exports to Canada. United Kingdom trade is largely in specialties as the Canadian manufacturers are important makers of general lines and cater to the ordinary trade as well as for certain special lines.

\* £1 sterling (at par) equals 4.86 Canadian dollars.

Products made for sale in the paints, pigments and varnishes industry in Canada during 1930 were valued at \$24 millions. This figure was 12 per cent. under the record of \$27 millions established in 1929 but exceeded by 6 per cent. the total of \$22 millions in 1927, the third best year on record for this industry. Factories in operation during 1930 numbered 78 of which 41 were situated in Ontario and 18 in Quebec. Products made for sale included \$9½ millions of mixed paints, \$2¼ millions of varnishes, over \$2 millions of enamels, \$1½ millions of nitro-cellulose lacquers, \$1¼ millions of white lead in oil, over \$½ million each of paste paints and stains and shellac. The production of many other lines included the following in excess of \$100,000: litharge, red lead, dry basic carbonate of white lead, putty, pyroxylin thinner, kalsomine, floor waxes and polishes, paint and varnish removers and asphaltic and tar paints.

Imports of paints and varnishes in the fiscal year ended March, 1931, were valued at \$4¼ millions of which \$3 millions were imported from the United States and \$718,000 from the United Kingdom. Of imports of 121,249 gallons of varnishes, lacquers, etc., the United Kingdom supplied 34,212 gallons. The United Kingdom also sold to Canada 97,732 gallons of liquid fillers, anti-corrosive paints, etc., out of a total import of 328,662 gallons. Paints and colours ground in spirits and all spirit varnishes and lacquers were imported to the extent only of 27,777 gallons, of which the United States supplied practically all.

The latest figures available for the chemicals trade and industry for the year ended October, 1931, show that the United Kingdom supplied \$4 millions and the United States \$21¼ millions of the \$32 millions imported. The United Kingdom obtained one-third of the total import trade in acids

and practically all the business in nitrate of ammonia, the United Kingdom's share being \$73,547. The United States supplied the Dominion with almost all its imported cellulose products and also its liquid chlorine. The United Kingdom and the United States approximately halved the business offering in chloride of lime, which amounted last year to \$78,000.

#### Medicinal Preparations.

Of \$2¼ millions of business in medicinal preparations the United Kingdom did \$637,000. It supplied only \$235,000 of the \$3¼ millions of dyeing and tanning materials imported into the Dominion last year. Most of the imported fertilisers come from the United States, but these are likely to be reduced in future on account of increased Canadian production. The United Kingdom sold last year about \$50,000 of glycerine to Canada out of a total import of \$374,000. The balance came from foreign countries other than the United States. Over \$3½ millions of paints and varnishes were imported and the United Kingdom share was \$700,000. The United Kingdom appears to have an opportunity for increasing its share of the import business in lithopone and zinc white. It has never been able to sell any quantity of carbon black to the Dominion which buys over 10 million lb. annually. There is little business in ready-mixed paints or varnishes on account of Canadian production. The United Kingdom obtained last year about one-fifth of the total import business in perfumery and the United States about three-fifths. Most of the imported soap, amounting to approximately \$1 million, came from the United States although Canada is a substantial producer. The United Kingdom sold only \$½ million of sodium compounds imported into Canada last year, the United States being the principal supplier.

## Imports of British Chemicals in the West Indies

### Trade Commissioner's Report

Mr. J. L. WILSON GOODE, the British Trade Commissioner, Port of Spain, Trinidad, has issued a report on "Economic Conditions in the British West Indies," which has been published for the Department of Overseas Trade by H. M. Stationery Office (3s. net). As regards the foreign trade of the area under review, Mr. Goode remarks that, generally speaking, the total value of the imports into the individual colonies during 1930 was less than during the previous year, but this is attributed more to reduced values than to lesser quantities. The imports from the United Kingdom were well maintained, and in some of the colonies the percentage of the total imports showed an increase in point of value. Mr. Goode adds that United Kingdom manufacturers and export merchants are strongly advised to exercise extreme caution in dealing with firms of which they have no knowledge. Careful inquiries should be instituted before shipments are made, otherwise severe losses may be incurred.

#### Paint and Varnishes

In spite of the restricted demand, manufacturers of paint, etc., both British and foreign, are well represented in this market. Some paints of United Kingdom manufacture are very well known throughout the West Indies and have acquired a strong hold on the local trade. Other United Kingdom firms are making a determined effort to increase their trade locally, both by advertising and by active canvassing. British and foreign manufacturers of paints and varnishes are now so widely and actively represented in these colonies that local firms are not disposed to accept a paint agency in competition with established brands unless prices are exceptionally low. For this reason, it is essential for any firm desiring to cut into the trade to furnish the fullest particulars, including prices.

Exports of rubber from Trinidad have decreased enormously in point of quantity as well as of value. The exports during the year 1930 were 11,049 lb., valued at £553, as compared with 64,684 lb., valued at £3,912 in 1929, and 72,641 lb., valued at 6,050 in 1928. The export of rubber from British Guiana during 1930 was 46 cwt., as compared with 15 cwt. in 1929.

In Jamaica dyewoods continue to languish, and the exports of wood and logwood extract were even lower during 1930 than during 1929. It is difficult to secure a market for the wood and owing to the competition of synthetic dyes, the manufacture of logwood extracts continues at a low standard of production. The Director of Agriculture points out that this is a matter for extreme regret as the industry is a valuable one to the colony, for it not only affords much outdoor labour but provides employment for skilled workers in the local factories.

#### Chemical Imports

The United Kingdom has by far the largest trade in chemicals, the United States being the largest competitor and Canada the next largest, the latter chiefly with calcium carbide. The United Kingdom is also the largest supplier of drugs, but the trade in patent medicines is largely United States and Canadian, both countries advertising very extensively in the West Indian papers.

An appendix to the report gives particulars of the comparative imports for 1929 and 1930 of some of the principal manufactured articles and the chief sources of supply. The figures relating to chemicals are as follows:

		Barbados.	British Guiana.	Trinidad & Tobago.	Jamaica.
		£	£	£	£
Total	1929	5,846	16,117	41,388	25,050
	1930	6,666	13,918	39,713	24,646
United Kingdom	1929	2,973	9,771	22,667	11,784
	1930	3,321	9,242	24,138	12,318
Canada	1929	956	1,949	1,128	2,032
	1930	1,141	1,720	2,171	1,713
United States	1929	1,430	2,587	8,453	9,390
	1930	1,648	1,597	8,464	7,681

Experiments in the planting of tung oil in British Honduras were started during the year 1930. The Department of Agriculture distributed a number of seedlings to planters in different areas and records are being kept of their growth. It is hoped that these experimental plantings will meet with success and thus open up a new avenue of agricultural industry.



## Decrease in Chemical Prices in Belgium

### Effects of the Depression

IN his report on "Economic Conditions in Belgium," published for the Department of Overseas Trade by H. M. Stationery Office (3s. 6d.), Mr. N. S. Reytiens, the commercial Secretary to the British Embassy at Brussels, indicates that while the country has suffered from the general critical conditions, her position is favourable as compared with other countries. The gold standard has been maintained, the gold cover held against currency is high, and the Government Budgetary policy is designed to avoid any extensive deficit. Industry and trade have not been immune from the general depression, and the various restrictive measures imposed in her export markets have had a serious repercussion on many of the Belgian industrial enterprises.

The chemical industry has suffered a great deal from the trade depression. Sales prices have fallen considerably, while the price of the raw materials has advanced. Trade in acids and chemical fertilisers has not been at all good, and sales prices appear to have fallen to the extreme limit, both on the home and export markets, the reduction during the period under review being about 10 per cent. The prices of other chemical products have on the whole been less unfavourable, the reduction ranging from 5 to 10 per cent., but consumption has declined. The depreciation of sterling currency also adversely affected all branches of the trade.

Manufacturers of nitrogenous products in Belgium are over-produced. Considerable capital has been invested in this industry, which has been greatly developed and extremely prosperous of late years. The output has been steadily increasing, so much so that the supply at this time of business and agricultural depression far exceeds the demand. The abolition of the international nitrogen cartel in July led to a slump in prices and the serious position of the industry led the Government to subject the import and transit of nitrogenous products, including nitrogenous fertilisers, to the requirement of a licence, as from August 17, 1931. The measure has called forth numerous protests from various agricultural and other quarters, and in particular from the Antwerp Chamber of Commerce, as it seriously affects the shipping and transit trade of that port. It has nevertheless been maintained. In return for this measure of protection Belgian producers have promised to reduce their prices in 1932 by 30 per cent. as compared with 1931.

#### Imports and Exports

Although sales have been far from satisfactory there is no excess of stocks, and should the market for agricultural produce improve, a better time may be in store again for the chemical trade. During the period under review, imports of sulphate of ammonia increased from 35,000 tons (Fr. 47 million)\* to 64,000 tons (Fr. 66.9 million), of which quantity 35,000 tons (Fr. 37 million) came from Holland. Exports also increased from 58,000 tons (Fr. 77 million) to 102,000 tons (Fr. 104 million), mainly to Germany (31,000 tons—value Fr. 35.7 million), the United States (17,900 tons—value Fr. 12 million) Spain and Holland.

Imports of superphosphates of lime fell by about 2,400 tons but exports have increased from 118,000 tons (Fr. 50 million) to 203,000 (Fr. 80 million). Holland took 59,000 tons (Fr. 19 million), the United Kingdom 53,800 tons (Fr. 21 million), France 38,000 tons (Fr. 15 million) and Germany 21,000 tons (Fr. 7 million).

Imports of sulphuric acid have declined from 18,000 tons (value Fr. 6 million) to 12,000 tons (Fr. 4 million), while exports fell from 164,000 tons (value Fr. 49 million) to 154,000 tons (Fr. 39 million). As regards dyes and colours, the position has been more favourable than for heavy chemicals in so far as the home trade is concerned. Export business, however, has become increasingly difficult, owing to the policy on the part of foreign markets to restrict their purchases and also on account of the financial difficulties being experienced by even old-established customers overseas, so that Belgian suppliers prefer not to run the risk of

taking orders under present conditions in certain South American and Balkan markets. Difficulties abroad have been greatly increased through the depreciation of sterling currency, which has necessitated the revision of all quotations on the part of firms accustomed to sell in £.

Imports of varnishes, lacs and siccatives have declined from 1,800 tons (Fr. 25 million) to 1,740 tons (Fr. 22 million), though imports from the United Kingdom show a slight increase (from 389 tons, value Fr. 3.8 million to 403 tons, value Fr. 3.9 million). Exports increased from 138 tons (Fr. 1.7 million) to 769 tons (Fr. 7.9 million).

Imports of enamels increased from 137 tons (Fr. 1.7 million) to 198 tons (Fr. 2 million), the supplies obtained from the United Kingdom having increased from 20 tons to 30 tons. Exports increased from 169 tons to 200 tons.

Prepared colours not specially classified have declined from 970 tons (Fr. 7 million) to 906 tons (Fr. 6 million). The quantity imported from the United Kingdom, the chief supplier, was 344 tons (value Fr. 1.9 million), about 70 tons or 684,000 Frs. less than for the corresponding period of 1930.

Owing to the specialised nature of the work in the chemical trades, the wage reductions applied in most other industries have not greatly affected the wages paid to chemical workers.

In some cases slightly reduced wages have been adopted, but in others wages have remained quite unaltered, except in so far as they were affected by short time.

#### The Cement Industry

A profound feeling of depression has characterised the cement industry during the period under review. Sales have fallen off and the decline in exports noted during the latter part of 1930 has been even more marked in 1931. Exports during the first nine months of 1931 fell to 1,022,166 tons (as against 1,420,627 tons and 1,270,869 tons in the corresponding periods of 1929 and 1930), of a value of only 194.8 million francs (corresponding figures for 1929 and 1930—351.7 million francs and 300.8 million francs). Exports to Argentina fell from 128,327 tons (January-September, 1930), to 38,798 tons (January-September, 1931). Exports to the United States were only 13,556 tons, a tremendous drop as compared with two years ago, in the first nine months of 1929 exports to the United States being 158,534 tons. Big declines have also been registered in 1931 in exports to Brazil and the United Kingdom. Exports to Morocco and Holland showed an increase.

It will be seen from these figures that exports, which account for 55.5 per cent. of Belgian production, have been very dull during the period. Moreover, the reduced orders have been keenly competed for by rival manufacturers, so that prices have fallen below cost. The abandonment of the gold standard in Great Britain led to a cessation of orders from that market. The internal market has also been calm and prices have shown a weakening tendency, as a result of the acute competition among producers, who could no longer sell at remunerative price overseas. The decline in exports has been a serious matter for the Belgian industry. The cause of this decline lies of course largely in the general crisis which is paralysing all trades. But it also owes its origin in part to the establishment and development of local industries in other countries—Spain, South Africa, Egypt, etc. The introduction—or raising—of tariffs abroad for the protection of these industries has also had a serious effect. The big drop noted in exports to the United States, for example, is a result of the tariff voted in that country in June, 1930. In this connection, it is interesting to remark that in June, 1931, the United States Tariff Commission sent experts to Belgium to study the situation in the Belgian factories and to examine whether the Belgian demand for a reduction was justified.

#### Artificial Silk

For the first time for many years the balance sheets of even the most important artificial silk companies show a loss and it would appear that the crisis is likely to be of some duration. Orders during the period under review have been scarce, but prices remained fairly steady, though unremunerative.

\* Present par rate of exchange—Fr. 175 = £1. Actual rate on December 31, 1931—Fr. 121.75 = £1.

Technical improvements have combined with bad trade to reduce the number of hands employed in this industry. The total output for the year 1930 is estimated at about 5,500 tons, as compared with 7,300 tons in 1929. The depreciation of the £ will probably increase still further the difficulties with which Belgian manufacturers are faced. Imports of undyed artificial silk yarns decreased from 500 tons (value Frs. 30 million) to 480 tons (Frs. 20 million).

The quantity exported increased from 1,870 tons to 1,980 tons, but the value of these exports diminished from Frs. 111 million to Frs. 100 million. Imports and exports of dyed artificial silk yarns have also been reduced, the latter from Frs. 18 million to 11 million. The value exported to Germany alone fell from Frs. 12 million to less than 5 million francs.

### The Match Industry

A further decrease in the local production of matches took place in the first nine months of 1931, the production of Belgian factories falling to 891,990,000 boxes, as compared with 1,011,714 boxes in the corresponding period of 1930. There has been a decrease in production in the last two years, of approximately 20 per cent. Total sales by Belgian factories during the period under review exceeded the total production by over 2 million boxes.

The diminished production is entirely due to decreased exports, which in their turn are a consequence, not so much of the world depression as of the fiscal measures taken by a number of countries like the United States, Egypt and China. Exports in the first nine months, as compared with the corre-

sponding period of 1930, showed a falling-off of 163,782,000 boxes to 580,622,000 boxes. On the other hand, Belgian consumption increased during the same period by 6,166,000 boxes to 313,564,000 boxes. Imports during the first nine months have been practically nil, the statistics showing a total of only 150 kgs.

### Scientific Industrial Research

During the year 1930-1931, six subsidies amounting to a total of 372,000 francs were granted through the Special Bureau of Industrial-Scientific relations. These concerned branches of the leather, iron-foundry, chemical, electrical, horticultural and textiles and cement industries. The subsidies were all granted upon the condition that the industry concerned should share the expenses incurred and agree to repay in full the subsidy granted by the National Fund should the assistance given lead to remunerative results from an industrial point of view.

The total imports of chemical products from all countries for the first nine months of 1931 amounted to Frs. 766,000,000, as against Frs. 759,000,000 for the corresponding period of 1930. Chemical products exported during the nine months totalled Frs. 1,139,000,000, as against Frs. 979,000,000. In an appendix dealing with trade with the United Kingdom, the imports for the nine months are shown at 6,214 metric tons, valued at Frs. 34,584,000, compared with 8,051 metric tons, valued at Frs. 30,549,000 for the corresponding period of 1930. Exports to the United Kingdom totalled 160,569 metric tons (Frs. 215,185,000) as against 81,319 metric tons (Frs. 126,214,000).

## The Chilean Nitrate Industry Announcement by Anglo-South American Bank

THE Anglo-South American Bank has announced that "an arrangement has in principle been concluded with a group of banks headed by the Bank of England, under which certain assets of the Anglo-South American Bank connected with the nitrate industry amounting to over £7,000,000, which cannot at present be realised, will be taken over subject to the guarantee of the Anglo-South American Bank, the bank being simultaneously relieved of a demand liability for an equivalent amount. The contingent liability in respect of this guarantee will rank after deposits and all other liabilities to clients. The substitution of a deferred contingent liability for a cash liability at present payable on demand will strengthen the position of the bank and afford increased security for its clients. As soon as the details of the arrangement have been completed, an official communication will be made to shareholders."

### Frozen Nitrate Assets

The connection of the Anglo-South American Bank with the Chilean nitrate industry (Cosach), according to "The Financial News," arose naturally out of the large and sound banking business which that bank had transacted for many years with the old nitrate companies. The undermining of the soundness of this business began with the rise in nitrate stocks in Chile from 670,000 tons at June 30, 1928, to 1,702,000 tons at June 30, 1930. Since the companies were not working very profitably at that period, the rise in stocks had to be financed largely by advances from the bank. About the same time the acquisition of the Lautaro Co. by the Guggenheim interests brought the Anglo-South American Bank into close connection with the Guggenheims, and led to its participation in the financing of Cosach in its early stages. It was originally intended that the advances made by the banks at this period should be funded and repaid in cash out of the Cosach bond issue planned for the closing months of 1930. Growing difficulties, however, both reduced the size of the issue and limited the extent to which credits could be repaid. During part of the period of the loan negotiations (actually January-February, 1931), the Chilean manager of the bank, Don Carlos Castro Ruiz, was Finance Minister to the Chilean Government. The bank was thus deeply concerned with the fortunes of Cosach, when, in the second half of 1931, the pros-

pects of nitrate sales were seriously impaired by the setting up of import prohibitions specifically directed against Chilean nitrate in many of Chile's best markets.

The probable conditions under which it would be decided by the Chilean Government to allow Cosach to continue working by an adjustment of the Chilean judicial position were outlined last week by Senator Silva, who is a member of the financial commission which is investigating the transactions which led to the formation of Cosach. He said in an interview that he thought the Prime Minister and the National Congress would favour a solution of the controversy regarding the company, on the following lines:—(1) Equality in respect of all creditors in the legal preferences established; (2) drastic economies and reductions in the costs of direction and administration; (3) changes in the higher personnel and in the chief direction of Cosach; (4) greater facilities for the supervision of all future operations and their establishment on a fiscal basis, without prejudice to the validation of the previous transactions of the combine.

## German Phosphate Trade Expansion of Imports

GERMANY'S imports of crude phosphate and of superphosphate show contrary trends, the former decreasing and the latter increasing. Imports of crude phosphate fell by more than 50 per cent. in the first two months of 1932, amounting to 60,069 metric tons, compared with 121,784 tons in the corresponding period of 1931, and 128,927 tons in the first two months of 1930. Superphosphates, on the other hand, have been steadily upward, rising to 32,727 tons in the first two months of 1932, from 30,107 tons in the corresponding period of 1931, and 25,989 tons in the same period of 1930. The expansion in superphosphate imports this year has been due entirely to receipts of 19,210 tons from Hungary. Imports from all other supplying countries fell off heavily, those from the Netherlands, hitherto leading source of imports, falling from 17,871 to 9,018 tons; Belgium, 8,156 to 3,115 tons; Danzig, 1,242 to 177 tons; Poland, 1,114 to 174 tons; France, 1,332 tons to practically nil; and all other countries as a group, from 392 to 133 tons.

## United States Foreign Chemical Trade

### Figures for the First Quarter of 1932

ACCORDING to the United States "Commerce Reports," America's overseas chemical trade during the first quarter of 1932 continued to show a favourable trade balance, with exports £1,000,000 greater than imports. Although the total value was reduced materially, this reduction was due partially to a marked decline in prices. The number of invoices during the March quarter was as great, if not greater, than in any other period. There is little evidence of a cessation of demand for American chemicals in world markets generally, even if the sizes of the individual orders have decreased noticeably. The large number of small invoices, however, indicates that some firms formerly giving little or no attention to exports are now endeavouring to cultivate this outlet. There has, moreover, been an increase in inquiries directed to the bureau by firms seeking agents even in the most obscure parts of the world.

#### Decreased Trade

Both exports and imports recorded large declines as compared with figures for the corresponding period of 1931, the former dropping 26 per cent., from £8,400,000 to £6,257,250, and the latter 41 per cent., from £9,015,000 to £5,252,000. The following table shows the imports and exports of chemicals and allied products during the first quarters of 1931 and 1932, by major groups:—

	Exports.		Imports.	
	1931.	1932.	1931.	1932.
	£	£	£	£
Naval stores, gums, resins	783,750	645,250	895,750	728,000
Crude drugs and botanicals	135,250	62,750	355,000	325,000
Essential oils	96,500	92,750	242,500	199,750
Pyroxylin scrap, film base and scrap	49,750	140,750	—	—
Sulphur, crude and pyrites	437,500	400,750	84,000	43,500
Coal-tar products	648,750	500,000	682,250	555,500
Medicinal and pharmaceutical preparations	1,040,250	729,750	314,250	215,250
Industrial chemicals	2,222,000	1,620,750	1,144,250	987,500
Pigments, paints, and varnishes	1,028,250	709,500	108,750	94,250
Fertilisers and materials	970,500	645,000	4,315,500	1,430,500
Soaps and toilet preparations	740,000	427,250	157,750	122,750

Exports of gum resin increased 39 per cent. in quantities shipped, from 169,400 barrels in the first quarter of 1931 to 233,700 in the first quarter of 1932, but values fell 6 per cent. from £355,000 to £344,250. Gum spirits of turpentine, however, failed to improve and exports declined from 2,102,000 gals., valued at £227,975, to 1,896,000 gals., valued at £176,725. After small receipts of varnish gums in the past two years, imports during the first quarter of 1931 advanced 16 per cent. in quantity, to 11,844,000 lb., and 13 per cent. in value, to £305,250. Lac and shellac accounted for this increase with a total importation of 6,714,000 lb.

#### Essential Oils

Somewhat larger amounts of essential oils were sent out of the country during the quarter although at a slightly lower value in some instances. Peppermint oil exports advanced from 5,700 lb. (£265,750) in the January-March, 1931, period to 72,300 lb. (£30,100) in 1932; orange oil, from 1,900 lb. (£1,600) to 7,100 lb. (£1,975); and all other essential oils except pine oil, from 335,300 lb. (£51,225) to 340,700 lb. (£37,150). Whereas incoming shipments of flower and perfume oils, for the most part, were somewhat higher in quantities received, those of citrus oils were reduced considerably. Lemon oil imports were down to 74,000 lb. and orange oil to 37,800 lb. Several countries purchased American sulphur in the first quarter of this year which did not buy any during the corresponding period of 1931, probably accounting for the 12 per cent. increase in total shipments which amounted to 84,500 tons, valued at £466,750.

In the coal tar products group, exports of tar and pitch returned to important places. Shipments of crude coal tar during the first three months of 1932—93,000 barrels—were larger than for the entire years 1930 and 1931. Exports of coal tar pitch, which exceeded 50,000 tons for the same period, were equal to those of the entire year 1931, double those of 1930, and larger than for any preceding year. The bulk of this shipment was destined for France.

Although the quantity of colours, dyes, stains, and colour lakes exported fell 30 per cent., to 4,940,000 lb., the value declined only 20 per cent., to £305,000. Imports, however, showed a loss of only 1 per cent. in weight, to a total receipt of 1,063,000 lb. (£287,500).

#### Synthetic Organic Chemicals

In the industrial chemical trade, most of the synthetic organic chemicals registered slight improvements. Those which made the largest gains were: Acetone and carbon tetrachloride, which doubled to 1,500,000 to 208,000 lb., respectively; methanol, which advanced 85 per cent., to 174,000 gal.; carbon bisulphide, 36 per cent., to 629,000 lb.; and miscellaneous synthetic organic compounds, 72 per cent., to 738,000 lb. Exports of citrate of lime, until recently an important import commodity, rose more than 120 per cent., to 2,118,000 lb., valued at £47,700. Of the other industrial chemicals which increased, of chief importance, were exports of borax, to 50,864,000 lb.; soda ash, to 5,915,000 lb.; and textile speciality compounds, to 1,263,000 lb.

With the exception of copper sulphate, potassium nitrate, sodium cyanide, and radium salts, which increased to a rather large extent, imports of industrial chemicals during the current quarter continued to be a little below those of the corresponding quarter of 1931. There were no conspicuous decreases, however.

In the other groups there were few signs of improvement in exports. In imports, however, there were some gains in receipts of pigments, especially chemical, and of ammonium sulphate. This last commodity continued the upward swing started last year, with a total importation of 63,000 tons, valued at £349,000 for the first three months of 1932.

## A New Protected Metal

### Outcome of Extended Research

A NEW protected metal called Robertson-Bonded metal has been carried through the laboratory stages of development at Mellon Institute of Industrial Research. According to the research report by Dr. A. W. Coffman, this metal is the result of extensive research that has ultimately led to the production of a laminated metal-felt material in which felted materials are cemented to steel with heat and pressure, utilising metals as adhesives. The composite laminated material, the outer surfaces of which are suitable felts, is then saturated with any desired saturant chosen with reference to the corrosive condition to which the metal is to be exposed in service. Paint, lacquer and resin films superimposed on the saturated felt give not only added protection but also desired attractiveness of appearance in the finished product. Owing to the fact that it is possible to choose between a number of felts and felt saturants to stand against various corrosive conditions, this new protected metal therefore promises flexibility in providing corrosion resistance. The ductile nature of the metal bond between felt and steel also makes it possible to subject this material to forming operations such as sheering, bending, corrugating, rolling and mild drawing without destroying adhesion between felt and steel. By selecting asbestos felt together with fireproof saturant a fireproof material results, while an increased insulating value over that of bare metal is obtained with any combination of felt and saturants. It is also claimed that this new material of construction has the strength of metal with none of the attendant "ring" and reverberation of bare metal.



## The Plastopal Resins

### A New Group of Urea-Formaldehyde Condensation Products

The following article is based on information supplied by Pollopas, Ltd., of London, who control the fundamental patents which cover the manufacture of this particular group of synthetic resins.

THE Plastopals are a new group of synthetic resins for use in the lacquer and varnish industries. The outstanding properties of these resins and finished products are their almost complete colourlessness and their very high resistance to discolouration under exposure to light. In addition, the finished lacquers are of great surface hardness and flexibility, and have a high gloss. This new combination of the properties should ensure such resins a place of considerable importance in the many industries concerned with the manufacture and use of lacquers and similar products.

These Plastopal resins are at present manufactured only by the I. G. Farbenindustrie, under a licence from Pollopas, Ltd., of London, who control the fundamental patents which cover the manufacture and use of resins obtained by the condensation of formaldehyde with ureas including (thiourea and derivatives). The pioneer patents, which protect the essential processes for the above condensation are British Patent Nos. 151,016 (condensation in absence of condensing agent); 171,094 (condensation in presence of basic condensing agents); 208,761 (condensation in presence of acidic condensing agents); 213,567 (two-stage condensation with *pH* control); and 238,904 covering the application of the urea-formaldehyde type of resin in organic solvents). Patents Nos. 208,761 and 238,904 apply more particularly to the production of Plastopal resins.

#### Principal Characteristics

Plastopal resins are manufactured in two types, designated Plastopal H and Plastopal W. Both are primarily intended for incorporation with nitrocellulose lacquers and both types are absolutely neutral. Their characteristics are summarised in the following table:—

	Plastopal H	Plastopal W
Colour number by Knauth-Weidinger method in 50 per cent. alcohol solution.	1-2	1-2
Acid number	Practically nil.	Practically nil.
Softening point by Kraemer-Sarnow method	about 80-90° C. 176-194° F.	about 60-65° C. 140-149° F.

On account of their highly plastic (film-forming) properties, the Plastopals pass from the solid to the liquid state over a wider temperature interval than do most of the resins at present used in lacquer technology, and therefore begin to liquefy even below the temperatures quoted. They have a high solubility in alcohols (alcohol and butanol), in glycol ethers (methyl glycol, ethyl glycol, butyl glycol), in various mixed-ester solvents as well as special solvents of the Pyrantone A, Anon and Methylanone types. In fairly high concentration they are readily soluble in methyl alcohol, but when these solutions are greatly diluted precipitation occurs. They are insoluble in pure esters (ethyl acetate, butyl acetate, amyl acetate, ether-esters (methyl glycol acetate, ethyl glycol acetate, butoxyl) aliphatic ketones (acetone) and aliphatic and aromatic hydrocarbons.

As, however, these non-solvents, with the exception of the petrol hydrocarbons, cause the Plastopals to swell to some extent, they also can be added in large proportions to the solvent mixture used in the preparation of lacquers, even in those cases where only these non-solvents are retained in a small proportion in the film to the end of the evaporation process.

When the Plastopals are heated for long periods at 90° C. and higher, they gradually become insoluble. In combination with nitro-cellulose this insolubility is achieved much more rapidly, in fact in from 24 to 48 hours at temperatures above 60° C., and in a few weeks, according to circumstances, at the ordinary temperature. The Plastopals alone are slightly affected by water, *i.e.*, the films become somewhat clouded in water. By combination with nitro-cellulose this effect is largely inhibited, and such films show very good weather resistance. With these properties the Plastopals possess in many ways a great similarity to natural shellac; like the latter, they are readily soluble in alcohol,

but insoluble in hydrocarbons. Like shellac, they are sensitive to water to some extent, and, like it, eventually become insoluble. They are, however, differentiated from shellac, to their advantage, by their brighter colour and excellent fastness to light, as well as by their complete homogeneity and uniformity. Spirit-soluble synthetic resins with these properties have not before been placed on the market. For many purposes, therefore, the Plastopals can be used with advantage in place of natural shellac. The resins have been found very suitable for use in all nitro-cellulose lacquers, especially in those in which alcohol is the main solvent, as well as generally for all kinds of wood lacquers. In polishing lacquers they have the advantage over the hydrocarbon-soluble resins mostly used (ester gum, dammar, etc.) that, on polishing with media containing mineral oil, they do not smear.

#### Compatibility with Nitro-cellulose

The Plastopals are particularly suitable for compounding with both ester-soluble and alcohol-soluble collodion cottons. They are compatible with the gelatinisers generally used in the production of nitro-cellulose lacquers, such as Palatinol C, tricresyl phosphate C11S and tributyl phosphate. With raw or blown castor oil alone, Plastopal W mixes fairly well, but Plastopal H is not sufficiently miscible. In combination with nitro-cellulose, however, castor oil can be added with both resins, especially if, as is usual on account of the danger of subsequent exudation, one of the above gelatinisers is present. The amount of Plastopal added can vary within wide limits according to the purpose in view and the properties required of the lacquer. Proportions of up to 100 per cent. and more on the weight of the dry collodion cotton can be used. Plastopal H gives a somewhat harder and also more water-resistant coating; Plastopal W, on the other hand, makes for rather greater softness and elasticity and, on account of its greater compatibility with castor oil, is to be preferred if large proportions of castor oil are used as softener. As gelatinisers, those mentioned above can be applied with castor oil in the case quoted. With very large proportions of Plastopal the use of castor oil tends to reduce the cracking which otherwise sometimes occurs. As solvents, those customary for nitro-cellulose lacquers can be applied; it is of advantage, with mixtures of esters and hydrocarbons, to increase somewhat the usual proportion of butanol. Pyrantone A and ethyl glycol may be mentioned as solvents giving enhanced gloss, but ethyl glycol acetate and butoxyl are useful with small proportions of Plastopals, although they are not direct solvents for these substances.

#### Application for Production of Polished Surfaces

The so-called "French polishing" of wood is giving way rapidly to spray application of a shellac or nitro-cellulose lacquer, which method allows of satisfactory results being obtained in the minimum of time and in conformity with modern mass production methods. The lacquers employed must contain resins in addition to the nitro-cellulose and softeners, in order to ensure adequate adherence to the wood and a high gloss without subsequent polishing. Plastopals H and W are of especial utility in this class of work, as they are the first resins to be obtained with the required properties.

Porous woods, such as walnut, mahogany and oak, have to be "filled" before polishing. Pumice stone or barytes, appropriately coloured or pigmented, are suitable, as are also various proprietary oil and resin fillers. The old method of filling, as used in French polishing, can also be advantageously applied when using nitro-cellulose lacquers containing Plastopal. A 2-3 per cent. solution of shellac in spirit is used to rub the suitably coloured pumice powder or Viennese chalk (calcined dolomite, calcium-magnesium oxide) into the pores of the wood. A little paraffin oil may be added to the shellac solution, whereby the surface is oiled as it is filled. Staining can be effected either before or after filling, but only water soluble stains, containing a little ammonia to assist fixation, should be used. Oil- and

spirit-soluble dyestuffs should not be considered on account of their insufficient fastness to light, and in no case should chemical stains, *e.g.*, potash stain, be used, as this will lead, often after only about three months, to a discolouration of the surface when nitro-cellulose containing Plastopal is subsequently applied. When an oil- or resin-filler is used, the polishing lacquer should, as far as possible, not be applied to the filled surface until a drying period of about 12 hours has elapsed, and then in two operations with an interval of about 2 hours between them. If the pores have been filled with dilute shellac solution, the polishing lacquer may be applied immediately after filling.

#### Advantages of Plastopal-Nitro-cellulose Polishes

After a Plastopal lacquer has dried for about three hours it can be rubbed down, and this without the use of a liquid medium. This rubbing down can be suitably effected with a band polisher, such as is largely used, and therefore generally available, for the surfacing of wood in furniture factories. Adequate dust-removal equipment must, of course, be installed if the rubbing-down is done dry, on account of the lightness and highly inflammable nature of the nitro-cellulose lacquer dust. Scratches from the polishing operation are eliminated by smoothing out with a cloth ball and "special polish." Final covering is preferably effected with a so-called cellulose polish, which does not entail a long period of "tackiness" of the surface, so that finished articles can be packed for transport in a few hours. The final polishing, however, should not be commenced for about 12-24 hours after the main polishing, after which period oil can be used with safety. The use of benzene should be avoided in finishing off, as it tends to soften the polish layer. The oil should be rubbed in with a liquid polish, an aqueous emulsion of paraffin with silicious chalk being the best type to use.

The insensitiveness of the Plastopals towards paraffin oil or polishing oil exceeds that hitherto observed with any natural or synthetic resin. Nitro-cellulose polishing lacquers prepared with Plastopal therefore allow of the wood surface being oiled with paraffin oil as in French polishing. This could not be said with any great certainty of any of the

polishing lacquers based on nitro-cellulose hitherto commercially available, whilst this was exactly what the consumers were demanding, as only in this way could the vivid colours of the wood surface be brought out to the same extent as in French polishing. The colourlessness and insensitiveness to light of the Plastopals, already mentioned, are also of special importance in polishing light woods, such as bleached maple, the colour of which is not in any way affected by Plastopal-nitro-cellulose lacquers. The required proportion of Plastopal is not more than two-thirds of that of any other resin which finds similar application, and the plastopals are the only resins which, with nitro-cellulose, give lacquers which can be rubbed down dry on the band polisher. This avoids damage to the wood by water, or to the lacquer by non-aqueous liquids. By the use of nitro-cellulose lacquering a total economy of about 30 per cent. can be effected quite generally, which, of course, applies when the nitro-cellulose polish contains Plastopal.

#### Colourless Lacquers

Plastopal W is specially suited to the production of colourless lacquers, a typical composition being 55.50 per cent. nitro-cellulose E 510 (moist with butanol or spirit, but calculated on dry weight), 20.25 per cent. Plastopal W, and 20 per cent. softener, consisting of a mixture of tricresylphosphate CIIIS and blown castor oil in the ratio of 1:1.

The use of raw castor oil is not to be recommended, because this easily exudes out of the polish, and it also reduces the extraordinarily high resistance to oil of the Plastopal. Butyl acetate is the solvent mainly used, the amount being about 20 per cent. About 5.8 per cent. of E13, or ethyl acetate alone, is also added, with 5.8 per cent. of methyl glycol as accelerator. Up to 5 per cent. of Butoxyl and up to 2 per cent. of butyl glycol may be added in addition. The addition of methyl glycol is especially important as it takes up the stain, thereby effecting a brightening of the surface. As thinner, a mixture of 20.25 per cent. soluol, 8.12 per cent. butanol and 5.8 per cent. spirit is employed. The special polishes which have been mentioned consist mainly of spirit, to which small proportions of ethyl glycol (5.8 per cent.), and possibly also ethyl glycol acetate, are added.

## Dyestuffs Output in the United Kingdom Progress in the Past Ten Years

FROM returns furnished by the principal British dyestuffs manufacturers, the Board of Trade has compiled a statement showing the quantities of the various main classes of dyestuffs which were produced in the United Kingdom during 1931, together with the total production of dyestuffs for the past ten years. The figures, which have been published in the "Board of Trade Journal," are as follows:—

PRODUCTION OF SYNTHETIC ORGANIC DYESTUFFS IN THE UNITED KINGDOM DURING THE YEAR 1931.									
Category.	Blacks.	Blues.	Browns.	Greens.	Oranges.	Reds.	Violets.	Yellows.	Total.
	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.
Direct cotton colours ..	2,906,629	1,594,666	702,928	237,157	350,604	1,017,190	101,468	921,702	7,832,344
Acid wool colours ..	1,810,520	1,476,099	175,704	523,536	830,095	1,860,106	491,917	1,025,339	8,193,316
Chrome and mordant colours (including alizarine ..	2,117,039	424,103	1,073,327	42,681	410,146	2,446,240	31,224	375,481	6,020,241
Basic colours ..	—	428,118	171,854	227,617	122,783	563,643	493,265	397,122	2,404,402
Sulphur colours ..	5,606,026	484,545	714,093	70,048	18,020	93,400	—	54,430	7,040,562
Vat colours (including indigo) ..	134,538	6,739,323	268,393	810,375	165,198	314,426	291,292	169,185	8,892,730
Dyestuffs for lakemaking ..	21,572	841	—	175,592	299	1,188,551	528	73,402	1,460,785
Cellulose acetate silk colours	187,210	346,275	—	1,275	97,073	139,856	55,762	94,478	921,929
Oil, spirit and wax colours	333,928	470,424	10,477	—	19,955	14,718	5,273	26,503	881,278
Unclassified colours ..	49,963	35,014	35,465	3,379	3,094	29,788	2,750	31,882	*3,433,207
Aggregate total ..	13,167,425	11,999,408	3,152,241	2,091,660	2,017,267	7,667,918	1,473,479	3,169,524	47,980,794

\* Including quantities not separately distinguished.

SUMMARY OF PRODUCTION OF SYNTHETIC ORGANIC DYESTUFFS IN THE UNITED KINGDOM, 1922-31.							
Year.	Total.	Year.	Total.	Year.	Total.	Year.	Total.
	Lb.		Lb.		Lb.		Lb.
1922 ..	23,832,967	1925 ..	32,693,402	1928 ..	50,960,472	1931 ..	47,980,794
1923 ..	33,100,719	1926 ..	30,297,000	1929 ..	55,785,032		
1924 ..	33,242,704	1927 ..	39,551,756	1930 ..	42,599,243		

## British Chemical and Dyestuffs Traders' Association

### President's Optimism at Ninth Annual Meeting

THAT the outlook for the chemical industry is distinctly more rosy to-day than it has been for some time was the opinion expressed by Mr. Victor Blagden, president of the British Chemical and Dyestuffs Traders' Association, at the ninth annual gathering of the Association, which was held at the Howard Hotel, London, on May 25. The business meeting was, as usual, preceded by a trade luncheon, presided over jointly by Mr. Blagden, president, and Mr. S. J. C. Mason, chairman, with Mr. H. Gilliat in the vice-chair.

Mr. A. HOME-MORTON proposed the toast of the president and paid a tribute to Mr. Blagden's work in the interests of the Association and of the chemical industry in general.

The PRESIDENT, in responding, suggested that the toast should have included the two vice-presidents, Mr. F. T. T. Reynolds and Mr. A. F. Butler, both of whom were unfortunately absent. Whilst the whole world was going through a tremendous crisis, and naturally they were not being spared, he felt that the position with regard to the future prospects of the chemical industry were distinctly rosier to-day than they had been for some time. One of the great difficulties with which they had had to contend was the matter of amalgamations and national cartels. They had had a great deal of Government interference and now they had had thrust upon them the new tariffs, which none of them liked very much. With regard to amalgamations, he felt that they had seen their best days and were now on the wane. They had not accomplished all that they were told they were going to do. Many of them had not been successful, and some of the supermen of the world had fallen short of their aim. With regard to the tariffs he felt that the pressure to introduce the tariffs as a measure of self-protection was going ultimately to bring about a standstill in international trade. When that came about, one thing of which he felt sure was that they would have universal free trade. He believed they were all thoroughly efficient, and given the opportunity they were bound to succeed.

He was of the opinion that the manufacturers were beginning to realise that the merchants were not a necessary evil, but that they were a necessary asset in the distribution of their manufactures, and he also believed that the Government departments were beginning to realise their usefulness. For all these reasons he was more hopeful than he was twelve months ago.

#### Election of Officers

At the annual general meeting which followed the luncheon, the following officers were elected for the ensuing year:—President, Mr. Victor Blagden; vice-presidents, Mr. Fredk. T. T. Reynolds and Mr. A. F. Butler; chairman, Mr. S. J. C. Mason; vice-chairman, Mr. Harold Gilliat (Leeds); hon. treasurer, Mr. H. A. Berens; hon. auditor, Mr. A. Hughes; executive council, Mr. F. P. Bayley (Bayley, Clanahan and Co., Manchester), Mr. P. F. Berk (F. W. Berk and Co., Ltd., London), Mr. A. E. Reed (A. Elder Reed and Co., Ltd., London); Mr. S. C. Cox (Taylor Bros. and Co., Ltd., London).

Mr. S. J. C. MASON, chairman, in his report on the year's activities of the Association, said the Association's financial position was much the same as in former years and they had been able to bring expenses approximately into line with income. In dealing with the question of finance he emphasised how essential it was that every chemical merchanting firm should continue its support of the Association. He took the opportunity of expressing his thanks to the officers and the members of the council who had so freely given their time and interest. He referred particularly to Mr. Blagden, who had been good enough to represent the Association in its joint work with the British Standards Institution.

Regarding the year's work in general, Mr. Mason said he hoped and believed that every member had been satisfied by the services rendered by the Association. Every day they received innumerable inquiries about various trade matters, the constantly changing and increasing import duties and restrictions, etc., and they were constantly called upon to negotiate with the various Government departments on behalf of members. Government departments in general realised the stand-

ing and independence of the Association, and they were glad that they had been able so often to secure from official quarters greater consideration and more prompt attention than could usually be commanded by the individual trader. The policy of the Association had always been to offer equal facilities to all members, and all documents and queries referred to the Association were treated as entirely confidential.

During the past year the Association had done a good deal of work in connection with Key Industry Duties, but of late they had had to concentrate particularly on the Abnormal Imports Duty and the general tariff. When the question of tariffs came under consideration it was known to them that other interested parties were making representations and recommendations to the Board of Trade, and they were able to submit the views of the chemical merchanting industry and, he believed, of many important consuming interests also.

#### Dyestuffs Licensing Restrictions

The Dyestuffs Import Regulation Act completed a run of ten years early in 1931 and was renewed under circumstances known to them all. In the report from the Select Committee on Expiring Laws published during the year it was recommended that this Act should not be continued for a period longer than one year. The manner in which this Act was operated had been adequately discussed on previous occasions. With a general tariff on dyestuffs now in operation he thought the Government might well consider the propriety of removing the licensing restrictions.

On the question of import duties, whether under the Key Industry Act or general tariff, members would be glad to know that the Association pink form was still accepted by the Customs in place of Form C.105. This form was specially drawn up in an honest endeavour to give the Customs the fullest information to which it was felt they were legally entitled, but without disclosing the particulars which appeared to the Association to be inquisitive and irrelevant demanded upon the ordinary Customs forms of entry and declaration. He believed that members of the Association were the only traders who enjoyed the privilege of the pink form. In his view the Association had the unlimited confidence of H.M. Customs and other Government departments, and it was unnecessary for him to emphasise to the members how essential it was that they should continue to justify this confidence by the most scrupulous and honourable exactitude in the information which they were called upon to furnish.

#### Difficulties of the Individual Trader

Owing to the abandonment of the gold standard various questions and difficulties had arisen in connection with shipping freights, port rates and so on, and the Association had been able to do valuable work in connection with settling disputes arising out of these questions, and obtaining an equitable regularisation of rates. The imposition of the general tariff, in which considerable changes would no doubt take place during the coming year, tended to make the position of the individual trader more and more difficult. Already it had been proposed to add a number of products to the Free List and similar movements might be expected in the future. On the other hand, efforts were being made to induce the Advisory Committee to recommend an increase in the duty from the general flat rate of ten per cent. in respect of a wide range of chemical and allied products. In connection with these applications for additional duties, which, if they succeeded, were bound to affect their interests and the trade of the country generally the Advisory Committee had stated that interested parties desiring to make representations to them should do so through their trade association. The work of the Association during the coming year was therefore certain to be particularly important. With all the various trade restrictions that were at present operating and the continual changes that would take place in the future, and with the world-wide tendency towards centralisation it was vital to their interests, individually and collectively, that they should have at their service a trade association of the strongest possible character.



## The Largest Blast Furnace Plant Installation at the New Ford Motor Works

DETAILS of the largest blast furnace plant in Great Britain, which has been erected at Dagenham for the Ford Motor Co., Ltd., by Ashmore, Benson, Pease and Co., Ltd., of Stockton-on-Tees, were given by Major W. R. Brown, of the latter company, in a paper read before a meeting of the Iron and Steel Institute at the Cleveland Technical Institute, Middlesbrough. A description was also given by Major Brown of the new blast furnace which his firm is erecting at Pretoria for the South African Iron and Steel Industrial Corporation, Ltd.

Both furnaces, said Major Brown, were designed for an output of 500 tons per day, although the commencing outputs might be in the neighbourhood of only 350 tons. At Dagenham all the raw materials were water-borne, and only one special type of iron required for the automobile factory would be produced. The raw materials for the furnace at Pretoria were rail-borne, and a variety of types of iron would be manufactured. The character of the land at Dagenham called for an extensive system of piling, and under the blast furnace itself, and excluding all the auxiliary plant, 7,000 concrete piles had to be driven from 45 to 70 feet deep. In both places provision had been made for a daily input of raw materials of not less than 1,000 tons. The wharf arrangements at Dagenham were the most up to date in the Port of London, and the stock yard had a capacity of 100,000 tons of ore and limestone and 33,000 tons of coal. Under normal circumstances 8,000 tons of ore could be unloaded and stocked in one day. A whole day's work would comprise the handling and distribution between a complexity of loading and discharging points of well over 10,000 tons of material by equipment operated by nine men per shift. The blast furnace would be operated by only six men.

## Industry and the Empire

### The Need for a Policy of Economic Co-operation

IN connection with the forthcoming Empire Economic Conference at Ottawa, the Federation of British Industries has issued a report on "Industry and the Empire," which has been drawn up by an influential committee of the Federation, under the chairmanship of Sir Hugo Hirst. The committee included Mr. J. Davidson Pratt, general manager and secretary of the Association of British Chemical Manufacturers, Mr. W. J. U. Woolcock, of Imperial Chemical Industries, Ltd., and a number of other representatives of the chemical industry.

In February, 1930, the Federation issued a report in connection with the Empire Conference of that year. The Federation stated therein that "the most urgent necessity exists for this country to take all possible steps to increase trade with the Dominions." In March, 1931, the Federation issued in "Industry and the Nation" its considered views on "reforms which are needed to rehabilitate British industry," emphasising the importance it attached to "the furtherance of inter-Empire trade and the development of the resources of the Empire as an immediate and vital economic necessity."

In July, 1932, the Empire Economic Conference re-assembled at Ottawa. The Federation stresses—even more emphatically than before—the paramount need for a policy of Empire economic co-operation broadly conceived and actively prosecuted. Such a policy, says the report, is called for by the economic necessities of the times. The war gave an immense stimulus to economic nationalism. During the post-war period this has steadily increased. Coincident, however, with this economic nationalism there is a tendency towards economic grouping of adjacent countries. The Federation believes that economic pressure is bound to stimulate the growth of such tendencies. Already one can see the progress made by the United States of America in strengthening her position on the American Continent, especially by means of obtaining control of sources of raw material, public utilities, etc.; the efforts of Japan to consolidate her position in Manchuria; the possibilities of a Central European block and

the development by France of a strong French Colonial Empire to the economic benefit of the French home producer. The competitive position of Great Britain, or of any Empire country individually, in the face of such economic groupings would be an extremely disadvantageous one. On the other hand Great Britain has the possibility of creating, together with the Dominions, India and Crown Colonies, an economic group of unlimited possibilities.

The change in the Inter-Empire relationship which has resulted from the enactment of the Statute of Westminster means in effect a new conception of the Empire. To-day the Empire is a Commonwealth of free and independent nations, bound together by the tie of allegiance to the Crown. The task before statesmen is to make such an agreement between the nations of the Empire, freely entered into on a basis of equality, as will give to the Empire the opportunity of organising its joint life to the benefit of all parts and of the whole, and of playing its part in world affairs. The Empire Economic Conference at Ottawa provides the opportunity of arriving at such an agreement on economic questions.

## The English China Clay Industry

### Producers to keep Watchful Eye on the Future

THERE has been a welcome improvement in the china clay industry, according to the shipments recorded for April. In January the aggregate shipments were 51,765 tons, whilst in February the monthly volume of business dropped to 48,933 tons, which was the lowest on record. Shipping increased in March to 54,095 tons and last month to 61,525 tons. The port of Fowey was responsible for the following shipments in April: 38,430 tons of china clay, 2,680 tons china clay and 2,714 tons of ball clay, representing a total of 43,824 tons, compared with 47,963 tons in April, 1931.

The English China Clay Producers, who have joined themselves into a new company without share capital, to promote and protect the status and general interests of those engaged in china clay production and to have a watchful eye on the china clay industry generally, is vested in an executive committee, comprising representatives of English China Clays, Ltd., Lovering China Clays, Ltd., H. D. Pochin and Co., Ltd., Mr. F. Parkyn (Parkyn and Peters), Mr. T. Martin Grose and Stocker, Mr. J. Morton (The Hensbarrow United China Clay Co.), Mr. J. Hoyle (The Manchester China Clay Co.), Mr. E. J. Lewis (The Beacon, Mid-Cornwall and Newquay China Clay Companies) and Mr. J. P. Goldsworthy (The Goonvean and Restowrack China Clay Co.). Mr. W. Prescott is the first chairman and the registered offices are at 21 Tothill Street, Westminster. There has been a private meeting of the company and although no communication has been made public it is understood that the China Clay Workers have been notified of a reduction of wages to take effect from Monday, May 16, from 1s. to 11d. per hour, and those engaged on contracts or piece-work to be reduced in accordance with the new terms. From inquiries made the men are protesting through their Union against a reduction of wages.

Before the war Cornish and Devon clays practically controlled the American markets, but the difficulty of shipping during the war provided such an opportunity to the clay mining industry of America, for the development of their own works, so that the recovery of these lost markets is not an easy task. Considerable progress has been made in the process of refining, but nothing comparable to the English method. English clays are universally considered to be superior in their uniformity of quality, which is so essential in the manufacture of the finest products. American deposits are generally so remote from the great centres of industry that English clays could be shipped to an advantage (provided there was no tariff) and sold at remunerative prices.

### Lautaro Nitrate Stocks

ACCORDING to information from Santiago de Chile the Banco de Chile has obtained a court lien on nitrate stocks lying in Chile in a lawsuit filed against the Lautaro Company to recover a loan of £200,000. It is understood that the Government has intervened and persuaded the bank to lift the embargo.

## What the Chemical Industry is Doing for Overseas Trade

### Some Typical British Products

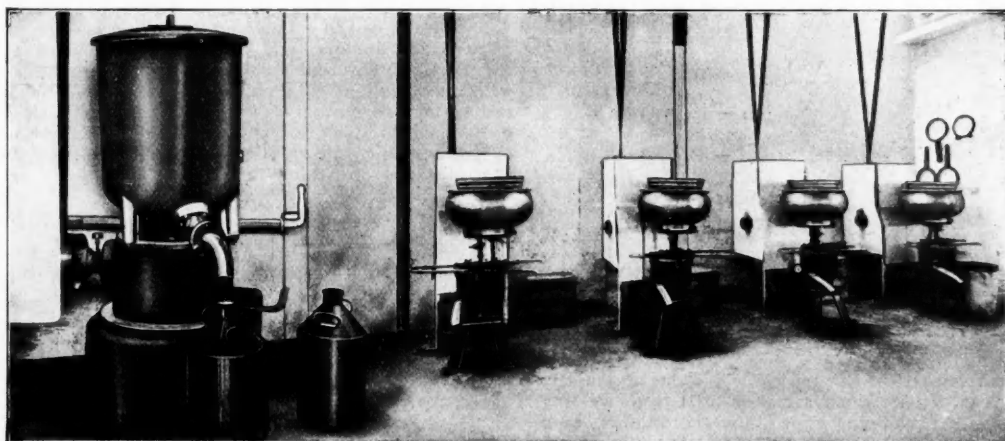
RECENTLY issued statistics serve to show that the chemical industry, the manufacturers of chemical plant and the allied industries are fully alive to the importance of their overseas trade possibilities, and the following notes, based on information supplied by a number of manufacturers in this Merchant Shippers' issue of *THE CHEMICAL AGE*, give some indication of the ways in which they are catering for the demands of the foreign and colonial markets. The requirements of the chemical and kindred industries in various parts of the world are to a large extent identical, so that a number of the products to which reference is made below are of common interest to the home and overseas markets.

HIGH-SPEED machines for crushing, disintegrating, dissolving, emulsifying and mixing in a fraction of the time required by other mixers have been patented in all industrial countries by Lang-London, Ltd., of Gamage Building, Holborn, E.C.1. In the Type 27 mixer, which is applicable to many branches of the chemical industry, the mixing is the most intensive possible, due to the design of the guide body and the force-feeding action of the centrifugal agitator, by which forced delivery every particle is put into motion. The conical disc on the bottom guide body and the high speed rotor produce, and apply to the material passing between them, a hydro-mechanical frictioning and reducing effect of great power. Type 29 is a machine of similar design, particularly suitable for paints, enamels, lacquers, lubricants, polishes, paper pulp and other mixtures.

The Lang patent clarifier-disperser-purifier-separator (Type 100) clarifies varnishes, cellulose nitrate, liquid polishes, etc., even if the impurities are specifically lighter than the material itself.

quickly and alloys with adjacent metal, making a strong sound bond. When used with borax flux, which requires a heat of about 1,400° momentarily, Sil-Fos becomes even more fluid, at this higher temperature its free-flowing, penetrating qualities being enhanced. These qualities also lead to economy, since only a small quantity of this new brazing alloy is required. In fact, only a film is needed when joints are tight fitting. Under a wide variety of conditions, Sil-Fos joints are strong and ductile. Laboratory tests on copper-to-copper lap joints made without using flux have shown an average tensile strength of 33,000 lb. per sq. in., with an elongation of 17.2 per cent. in two inches. The self-fluxing property of Sil-Fos is a decided advantage, as it ensures better results when used by ordinary workmen, and it reduces the labour cost of cleaning and finishing after joints have been made.

Laboratory tests made with copper, brass and silver solders in hot and cold solutions of sulphuric, hydrochloric and acetic acids, as well as tenth-normal salt solution, show that



Lang Type 27 Mixer and Type 100 Centrifugal Purifiers—a Complete Plant for Paints, Enamels, Lacquers, Polish, etc., installed in a London Paint and Varnish Works

In the case of various pigmented products, such as varnish enamels, cellulose enamel paints, etc., it removes uneven grindings, eliminates the costly grinding of the whole to finish the last small percentage, imparts lustre, delivers a uniform product, increases the opacity, disperses to a degree unattainable by any mixing machine and increases the covering capacity. It separates emulsions composed of any two liquids, or liquid and solids of varying gravities, and it does not aerate products. The "Manumixa" mixer, with hand and power drive, is designed for dealing with fluids, semi-fluids up to a great viscosity, and with fluids such as lacquers, and any miscible powders or soluble solids which it is desired to mix or dissolve with fluid. It gives 1,500 revolutions per minute and is useful not only for small but also for comparatively large quantities of material.

#### Sil-Fos Brazing Alloys

A new ease and economy in brazing and welding operations is afforded by the Sil-Fos brazing alloy, containing silver, introduced by Johnson Matthey and Co., Ltd., of Hatton Garden, London, E.C.1. Unlike base metal brazing alloys (which require from 1,600° to 2,100° F. to melt) Sil-Fos melts readily at 1,300° F., which is even lower than silver solders containing 50 per cent. silver, which require from 1,400° to 1,600° F. Sil-Fos is very free flowing, penetrates

Sil-Fos compares favourably with other brazing alloys and non-ferrous metals which are ordinarily used to resist corrosive attack.

For a silver alloy Sil-Fos offers to its users the following unusual features which ensure economical working in many varied types of brazing operations:—(1) Only a small quantity is needed on tight-fitting joints. No filling is necessary, in fact, best results are obtained when only a film is used. (2) Because of its low melting point, and its quick-flowing and deep penetrating qualities, Sil-Fos is easy to use and quick working, saving labour in the brazing operation and ensuring a greater percentage of good joints. (3) Labour is saved also in cleaning and finishing completed joints. There is little or no flux to remove, and if properly handled, not much of the Sil-Fos remains on the outside, due to its penetrating qualities.

#### Aluminium Paint in Heat Problems

The various uses of powdered and granulated aluminium are detailed in an attractive booklet which has been issued by The British Aluminium Co., Ltd., of Adelaide House, King William Street, London, E.C.4. The dividing line between finely granulated and powdered aluminium is not very clearly defined, but in general the former term is applied to material produced by blowing molten metal or by grinding

in grinding mills, while the latter is generally understood to refer to material produced by stamping small pieces of thin sheet into an impalpable mass, with periodic sievings and subsequent grading. The granulated product consists mainly of particles of more or less spherical shape, is free from grease and is unpolished, and is therefore most suitable for purposes in which the chemical properties of the material are made use of, such as in aluminothermics and calorising.



Liquid Fuel Transport Tanks, painted with Aluminium Paint to reflect Heat Rays

Aluminium powder, on the other hand, consisting essentially of minute flat particles, which are prevented from welding together during the stamping process by the addition of a small quantity of grease, finds its chief use in the preparation of metallic paint, which is employed as a decorative medium, as a protective coating, as a heat and light reflector, as a heat conserver, waterproofing medium and primer for surfaces which have to be painted with bituminous compositions or creosote preparations.

Aluminium paint reflects not merely the light waves but also the heat waves, and this property is made use of for protecting such things as oil storage tanks, tank wagons, refrigerator cars, cold storage rooms, explosive sheds, and similar constructions, more particularly in countries which are more favoured with sun than the British Isles. In Mexico and the United States in particular large use is made of aluminium paint for protecting large oil and petrol storage tanks against the rays of the sun, and tests carried out have demonstrated the large saving that is effected in evaporation of volatile oils, this being many times the value of the paint used, as there is not only the direct loss of so many gallons of oil, but what remains, having lost its most volatile compounds, is of less monetary value per gallon. This particular type of paint is also used for reducing the radiation of heat from hot objects such as boilers, furnaces, steam pipes, annealing ovens, and similar plant. In such cases the aluminium paint not merely reduces the heat losses and thereby saves money, but it also maintains the surrounding atmosphere at a more even temperature, with resultant pleasanter and healthier working conditions for the men employed, and consequent higher outputs. The ordinary medium used in making up aluminium paint will not withstand materially higher temperature than

ordinary paint, but there are now special vehicles available which will withstand temperatures as high as 800° C. Where the surface is even hotter than this, the medium is merely burned away, leaving the aluminium intact, and at a dull red heat it slowly alloys with the surface of the metal and disappears, and must be renewed at intervals if it is desired to maintain the heat-reflecting properties.

#### A Choice of Safety Appliances

Established in 1819, the firm of Siebe, Gorman and Co., Ltd., is well-known as the world's foremost manufacturers of safety appliances. In addition to being the originators of the diving dress which is in universal use to-day, they are the pioneers also of apparatus for work in irrespirable atmospheres, and manufacture a wide range of appliances for use in dangerous and unhealthy industries. A glance through the extremely comprehensive catalogue which the firm issues shows that they are, as their slogan states, providers of "Everything for Safety Everywhere." Of particular interest to the chemical industry is the new "Puretha" Mark IV respirator which marks a big advance over previous designs. It is claimed for this respirator that it is the most comfortable ever manufactured, provides a very wide range of vision, and can be worn for long periods without inconvenience. It may be stated, incidentally, that this facepiece is of the type supplied to the Government and used by the Army and Navy. To supply the need for a comfortable and efficient dust respirator, in a variety of industries and processes, the "Pulvasorb" and the "Lane" respirators have been produced. They are, without doubt, a notable advance over previous patterns.

In certain cases, notably where very high concentrations of gas are encountered and in atmospheres deficient in oxygen, it is necessary to provide apparatus which supplies the wearer with air other than that which surrounds him. Such apparatus are of two types:—(1) that in which fresh air is drawn or pumped through a length of air pipe, and (2) self-contained oxygen breathing apparatus. Of the former, the "Antipoy" short-distance breathing apparatus and the "Spirelmo"



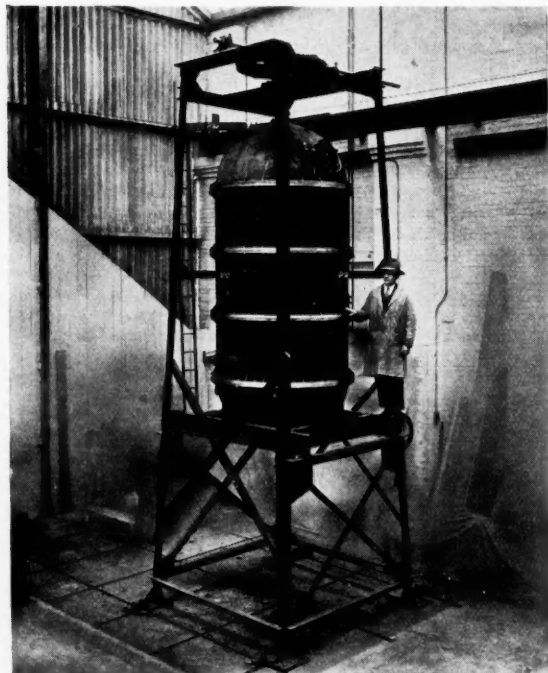
The "Puretha" Mark IV. Respirator

smoke helmets are the types available, and of the latter, the "Proto" and "Salvus" are well-known and used in all parts of the world. A recent addition to the range of these appliances is the "Fireox" apparatus. The self-contained apparatus, as its name implies, renders the wearer quite independent of the surrounding atmosphere. He carries with him his own oxygen supply compressed in a steel cylinder, and his exhaled air is purified by its passage through

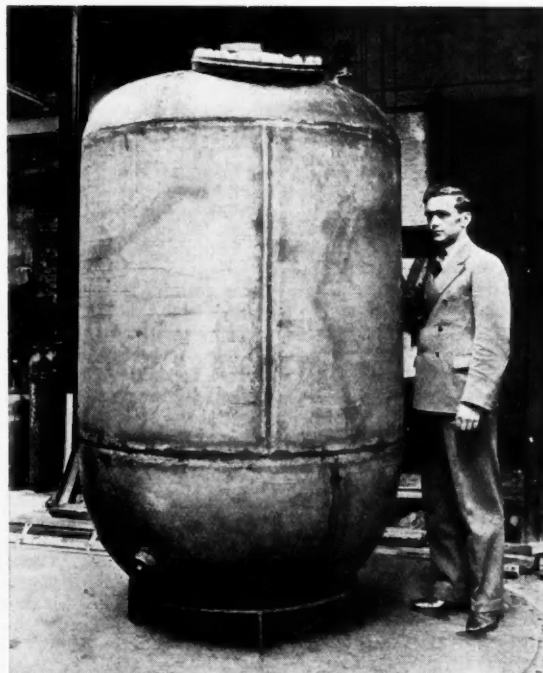


## Chemical Plant for Home and Overseas Trade

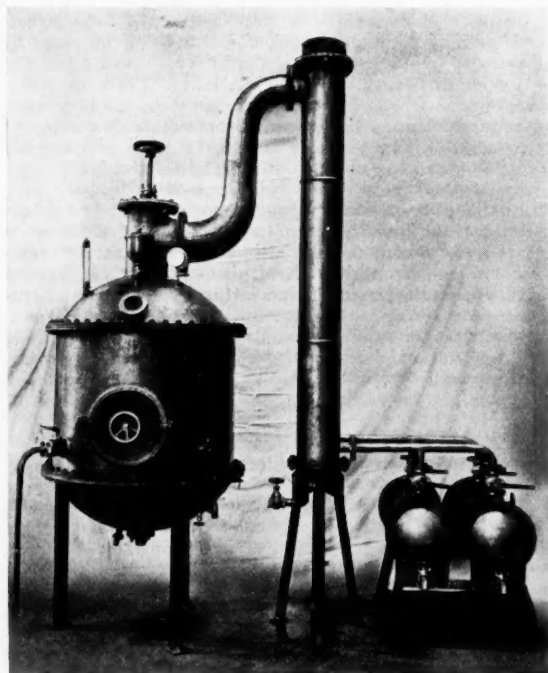
### Some British Productions



A large autoclave, complete with special mixing gear, jacketed, constructed in phosphor bronze.



Liner for large pressure vessel, constructed of autogenously welded monel metal.



Vacuum evaporation plant. The still, condenser and both receivers are in copper, and there are no brazed or soldered joints, autogenous welding being used throughout.



Large steam-jacketed kettle, complete with mixing gear. The inner jacket of the vessel, the top course and the agitating device are in monel metal.

*(These appliances were all supplied by the Aluminium Plant and Vessel Co., Ltd.)*

chemicals which absorb the carbon dioxide. The apparatus is automatic in action and lasts, according to type, from half-an-hour to two hours on a charge of oxygen and CO<sub>2</sub> absorbent. All appliances of this type work on the principle originated nearly 60 years ago by Siebe Gorman and Co., and their associates.

Other devices which this company manufactures include protective clothing, gloves and goggles, first-aid cases and safety belts.

#### Klinger-Oilit Jointing Material

For use in the presence of hydrocarbons, petrol, superheated steam, saturated steam, naphtha, water, etc., Richard Klinger, Ltd., of 120 Southwark Street, London, S.E.1., have produced a new jointing material under the name of Klinger-Oilit. Jointings on the market which are most resistant to petrol and oil are made up of vegetable matter which are treated with suitable ingredients in order to ensure the necessary elasticity and tensility. Such vegetable jointings, however, succumb to the action of hydrocarbons, and after short use get hard and lose their jointing ability. The resistance to temperatures is a limited one, because a temperature of 360° F. carbonises vegetable matter. Further, such vegetable jointings have a short resistance to water and fail completely for this reason, as well as the fact that they are non-resisting to temperatures. Klinger-Oilit, on the other hand, does not contain any vegetable matter, but consists of asbestos and suitable binding media which are impervious to hydrocarbons and high temperatures. Klinger-Oilit retains a lasting elasticity under the action of hydrocarbons, and high temperature. It is perfectly resistant to steam and water under all practical conditions experienced. This fact is of importance for the chemical industry, inasmuch as it is necessary sometimes to pass steam and water through pipe lines, and in such cases a joint of vegetable matter would fail hopelessly. Klinger-Oilit is an excellent jointing for oil refineries as well as for the chemical industry, and the distilling and motor industry. It is supplied in sheets and ready cut joints in all thicknesses from 8/1,000 in. upwards, in sheets measuring 40 in. by 40 in., 40 in. by 60 in., 60 in. by 80 in., 50 in. by 50 in., 50 in. by 100 in. and 60 in. by 80 in.

#### Filter Papers for all Purposes

Pure filter papers for laboratory work and in qualities to suit all industrial purposes is the speciality of Evans, Adlard and Co., Ltd., of Postlip Mills, Winchcombe, Cheltenham. They have now been making filter papers for upwards of 50 years, and their productions are stocked by all the leading wholesale laboratory furnishers. "Postlip" filter papers are supplied in sheets, circles, folded circles and rolls, and are fully described in a brochure which may be obtained on application to the firm. Grade 633B has a filtering capacity of 390 c.c. of water through a five inch circle in five minutes; and is especially adapted for analytical work; grade 633C has a filtering capacity of 460 c.c. of water; 633D is a hard paper for the filtration of the finest precipitates. The ash left by these three grades in the case of a five inch circle is respectively 0.00184, 0.00171 and 0.00179 grams.

The ability of these filter papers to retain fine precipitates is conclusively demonstrated by a report of tests carried out at the National Physical Laboratory. A series of beakers containing equal volumes of a dilute sulphuric acid solution were taken, the contents raised to the boiling point, treated with barium chloride solution and after rapidly cooling, filtered through papers of Grade 633D and 633E and the corresponding grades of comparison paper. The filtrates were in each case perfectly clear and remained so on washing, the precipitates remaining on the filter papers. Another and more drastic test was carried out with 1 gram quantities of an alloy containing 82 per cent. tin and 10 per cent. antimony, treated with nitric acid evaporated to dryness, and then treated with 100 c.c. of 10 per cent. nitric acid and boiled. Without allowing the turbid solutions to settle, they were immediately poured into funnels fitted with the moistened papers. When the solutions had all passed through, the precipitates were washed. It was noted that papers of Grade 633D and 633E gave very slightly opalescent solutions, but the amount passed was of such small proportions that on long continued standing no precipitate would settle. In only one

case was an absolutely clear filtrate obtained, *viz.*, in the case of a comparison paper similar to 633D. Speaking generally, no perceptible difference could be observed between the papers under test and those with which they were compared in their behaviour towards a solution containing one of the most difficult substances to filter met with in analytical practice. The amount of the oxides of tin and antimony so passed could be regarded as of no practical importance.

#### Kraft Paper Sacks

Kraft Sacks, Ltd., Somerset, whose London office is at Clock House, Arundel Street, W.C.2., are producing sacks suitable for most chemicals, manufactured from high grade fully sized Kraft paper, which stands up to rough handling and severe weather. The absence of dust when materials are packed in paper sacks is a great advantage. As many as thirty filled sacks may be placed on top of one another without any fear of bursting if care is taken that the paper sacks have not previously been exposed to dampness. Even when left in the rain for an hour, apparently the top sack only has been affected by moisture. Importance is attached to the manner in which the sacks are stored in the hold of a ship, care being necessary that they are not placed on or against uneven surfaces. Their smooth surface enables paper sacks to slide easier than jute sacks as the ship rolls. Kraft sacks are supplied lined with grease-proof paper for food factories, and a waxed inter-lining can be inserted for hygroscopic products. The sacks are smartly branded and are non-porous.

#### Paints and Enamels

Griffiths Brothers and Co. (London), Ltd., of Macks Road, Bermondsey, S.E.16, are the sole manufacturers of Ferrodor natural rustless peroxide iron paint for steel structures. Ferrodor ore, the pigment used in the manufacture of natural steel grey Ferrodor paint, is absolutely stable, chemically and physically. The ore is opaque to ultra-violet rays and is unaffected by water, acids, salt, ammonia, sulphur or cyanogen compounds. One of the chief characteristics of Ferrodor ore is the shape and behaviour of its indestructible particles. These particles, being micaceous or flaky in structure, lie flat and overlap one another, and when combined with the special weather-resisting medium, afford an impermeable elastic coating capable of expanding or contracting with the structure to which it is applied without any fissure of the paint film. An average coating of natural steel grey Ferrodor paint consists of about twenty layers of interleaved Ferrodor ore particles, bound by, and themselves protecting, intermediate layers of medium. The covering powers of Ferrodor paint on a smooth, plain, non-absorbent surface are as follows (per gallon): Natural steel grey, 100 sq. yds.; bridge grey, 100 sq. yds.; silver grey, 110 sq. yds.; natural purple, 100 sq. yds.; extra gloss permanent green, 110 sq. yds. These figures are calculated from tests under laboratory conditions, and require to be modified when estimating for practical work.

Another important branch of the company's activities is its anti-sulphuric enamel, specially prepared for the protection of surfaces in laboratories, chemical works, gas and water works, ore production works, etc. This enamel is not alkali-resisting, and where resistance to alkalis is necessary the company's Armour acid and alkali resisting enamel is applicable.

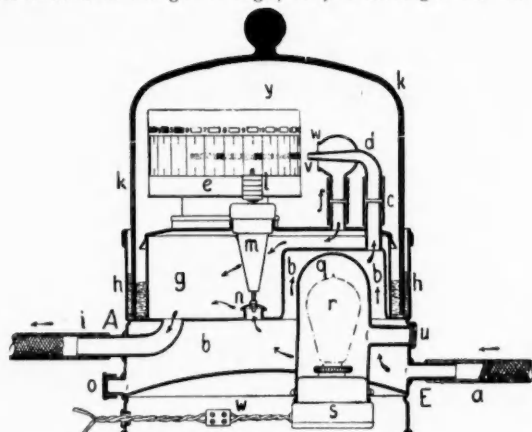
#### An Automatic Recorder for Dust-Laden Air

In modern industry the problem of the removal and collection of dust from air and gases is of outstanding importance. Sometimes it is a valuable dust, which must be reclaimed from the gas to avoid waste; sometimes it is a harmful dust, which if left uncontrolled may cause considerable damage through a dust explosion, or which, if the extent of its presence is not carefully checked, will lead to the choking of a valve. The Arkon dust recorder, obtainable from Walker, Crossweller and Co., Ltd., of 20 Queen Elizabeth Street, London, S.E.1, shows instantaneously any variation in the dust content of the purified gas and makes a permanent record of it, an interesting feature of this instrument being the manner in which the dust content is estimated from the adjustment of the gas inlet regulator. In addition, the instrument is equipped with a scale marked with varying percentages of "black" or "white," so that the chart can be compared

with this scale and very accurate estimations are formed, thus providing an additional check on the estimate formed from the adjustment of the gas regulator.

The working of this dust recorder may be seen from the accompanying illustration. The gas to be tested enters at *a*, flowing in the direction of the arrows, and passes through the heating chamber *b* where it is warmed by a 20 watt incandescent lamp *r* to help it to rise. The gas now flows up through *d* and issues from the nozzle *v* on to the chart, which is rotated by clockwork. Because the particles of dust in the gas have considerable velocity they penetrate into the paper chart which is round the drum, and become sufficiently firmly embedded to prevent their falling or being blown away; thus a band of varying shades is formed on the chart. This action is the special feature of the instrument; it will be seen that since the dust present actually records itself, an immediate indication of the dust content is obtained. The gas having thus given up a part of its dust is deflected back through *f* into the exit chamber *g* from which it leaves the instrument.

The proportionate heaviness of the marking on the graph is determined by the amount of gas, and hence of dust, which impinges on the chart during a given time. If the average dust-content of the gas is high, only a little gas will be re-



Sectional View of the "Arkon" Dust Recorder

quired in order to form a clear trace; the amount and rate of flow of the gas which is to impinge upon the chart is governed by a special regulator and hence by suitable adjustment a very small average dust-content can be made to give a clear indication. In order further to obtain the utmost clearness of indication the chart paper is supplied in either of two colours, *i.e.*, white for dark dusts, and black for light-coloured dusts. The dust trace on the chart is actually sufficiently durable without further treatment; it can, however, be made indelible by spraying with a special fixative, "Dust-fix." Where the gas to be tested is under pressure, no special power is required to drive it through the dust recorder, but in the case of pressures below 1 in. w.g. the gas has to be drawn through the instrument by means of an aspirator. The inlet piping can be up to 50 yards in length.

#### Precious Metals for Industry

Johnson, Matthey and Co., Ltd., of 73-82 Hatton Garden, London, E.C.1, are suppliers of platinum, gold and silver in a variety of forms, such as gauze, sheet, wire and seamless tubes. Their experience, extending over the last hundred years, in the refining and working of platinum and associated metals, together with the up-to-date plant at their disposal, places them in a foremost position to supply articles made of platinum, iridio-platinum, or rhodio-platinum. In addition they supply precious metal laboratory and industrial apparatus in the form of crucibles, dishes, filter cones, stills, condensers, pipe lines, etc., and can undertake special apparatus to meet customers' requirements. Silver and its application to chemical plant is dealt with in great detail in a booklet which can be obtained on application. Platinum crucibles are made in two standard patterns, the weight relative to capacity being the same in each case. Silver crucibles being made

of relatively thicker metal weigh about the same as platinum crucibles of equal capacity.

Silver nitrate is the leading chemical speciality supplied by Johnson, Matthey and Co., being guaranteed to contain 63½ per cent. of fine silver and to be of uniform quality. For many years this product has been recognised for its consistent quality and is supplied by them in large quantities to all the leading photographic film, plate, and paper manufacturers, glass silverers, process engravers, and manufacturers of medical supplies. For the plating and gilding trades they supply cadmium plating mixture; cadmium anodes; chromic acid 99½ per cent.; gold cyanide containing 88 per cent. of fine gold; gold potassium cyanide; gold cyanide and potassium containing 40 per cent. fine gold; gold anodes; silver cyanide containing 81 per cent. of fine silver; silver potassium cyanide containing 54 per cent. of fine silver; silver cyanide and potassium containing 30 per cent. of fine silver; silver anodes; and nickel sulphate. Platinised asbestos, impregnated with with an impregnation of 5 per cent. platinum, is among the company's many other specialities.

#### Means for Cutting Metals in the Repair Shop

Oxygen cutting machines for all purposes are described and illustrated in a brochure which can be obtained on application to the British Oxygen Co., Ltd., of Angel Road, Edmonton, N.18. These machines are designed to meet the production requirements of engineers and equipment manufacturers, but some of them will be found particularly useful for chemical plant fabrication and repairs. One such machine is for tube cutting; this will cut steel tubes of any thickness up to 2 in. and of any diameter from 5 to 8 in. The British Oxygen Co. have also issued a small booklet entitled "Hints for Oxy-Acetylene Welding" in which some useful information is offered concerning the treatment of the various metals which are now worked by the welding process.

#### Acid Pumps

L. A. Mitchell, Ltd., chemical engineers, 37 Peter Street, Manchester, the largest suppliers of acid pumps in this country, specialise largely in acid pumps and handling problems. They have delivered hundreds of acid pumps for different industries. A successful centrifugal pump must be able to operate continuously or intermittently without leakages of acid and constant expense for renewal of gland packings, spindles, glands and impellers. It is claimed for the Mitchell D.S.F. acid pumps that the design is such that the pumps will give continuous success over long periods, without any expense for upkeep, or troubles. These pumps are made of special acid proof stoneware and armoured with cast iron. All internal parts of the pumps coming in contact with the liquor to be pumped are of special stoneware and consequently no corrosion can take place, or contamination when pumping very pure liquids for the foodstuff industries. The pumps are made in various sizes from 1½ in. up to 5 in. delivery and for handling up to 1,000 gal. per minute delivering against heads up to 135 ft. The pump can be belt driven, or coupled direct to electric motors.

#### Sulphonated Alcohols

Ronsheim and Moore, of 11a Wormwood Street, London, E.C.2, announce that the success of their sulphonated fatty alcohols, sulphonated lorol and sulphonated oenol has been so swift that they have found it necessary already to hold large stocks in all the main ports serving consuming areas in this country. They have also found it necessary to appoint a complete chain of local sub-agents. The following have been appointed sub-agents and distributors for all trades except laundries: North of England—Dunn Brothers' Successors, Ltd., 1 Booth Street, Albert Square, Manchester; Leicestershire and Nottinghamshire Area—Christian and Co., Farben Works, Abbey Street, Leicester; Scotland—Henderson, Hogg and Co., 17 Cadogan Street, Glasgow, C.2; Ireland—James A. Beck and Son, Ltd., Dalton Street, Belfast. Inquiries for areas should be addressed to the appropriate firms, and inquiries outside these areas should be addressed direct to Ronsheim and Moore. Laundries are receiving separate detailed separate attention and the products will be distributed to them for England, Scotland and Wales (but not for Ireland, where Becks will also supply laundries) by B. Laporte, Ltd., Luton, Bedfordshire.



## The Chemists' Exhibition

### Fortieth Annual Display

THE 40th annual Chemists' Exhibition, which is organised by "The British and Colonial Pharmacist," has been held at the New Hall of the Royal Horticultural Society, Westminster, during this week, coming to a close yesterday. This exhibition is essentially concerned with the retail pharmaceutical trade, but a few of the stands were of general interest to readers of THE CHEMICAL AGE.

Potter and Clarke, Ltd., of 60/64 Artillery Lane, London, E.1, have been showing a fine selection of essential oils and derivatives, distilled and manufactured in their laboratories at Victoria Mills, and Johnson and Sons, manufacturing Chemists, Ltd., of Hendon, displayed a very comprehensive range of pharmaceutical and photographic chemicals, including Arvitin, an organic compound of colloidal silver, with vitellinic acid from egg yolk. Howards and Sons, Ltd., of Ilford, continued to maintain the reputation gained during over 130 years of experience and progress in the production of fine chemicals by a display of standard ether, now made from pure spirit, duty free, and not methylated spirit, without alteration in price. Howards' iso-propyl alcohol is a perfect substitute for S.V.R. in the manufacture of essences and perfumes, and for many other purposes, and much cheaper.

In the equipment section of the exhibition Wm. Gardner and Sons (Gloucester), Ltd., of Gloucester, demonstrated the advantages of their patent "Rapid" sifter and mixer for all kinds of dry powders, and the "Rapid" sifter and mixer with essence sprayer, for adding liquids and essences to the powders. Gardner's patent grinding and dressing machine for producing various grades of sugar at one operation, infants' and invalids' foods, crystals, drugs, etc.; the "Quick-Change" powder dresser for sifting through very fine meshes; and "Rapid" dryers, for removing moisture from powders, chemicals, etc., were also shown. Glass bottle manufacturers were represented by Bellchambers Glass Bottle Co., Ltd., of 71 Ronalds Road, London, N.5, the International Glass Bottle Co., Ltd., of 48 Fore Street, London, E.C.2; and United Glass Bottle Manufacturers, Ltd., of 40-43 Norfolk Street, London, W.C.2.

In opening the exhibition, Mr. A. R. Melhuish, president of the Pharmaceutical Society, said British pharmacists were proving equal to the growing strain of competition, but would have to be prepared for even keener competition in the future. He remarked upon the advantage of these exhibitions, of which the present was the fortieth, in showing the enterprise of British chemists, and advised traders to go on buying as much as they could afford in spite of the depression. Among the novelties in the exhibition were examples of medicated confectionery—toffee containing 20 per cent. milk food and 20 per cent. glucose, and iodised barley sugar for administering iodine. There were also medicated massage creams to replace embrocations and a new perfumed moth powder composed of thyme, rosemary, mint, tansy and cloves, which is declared to be as effective in repelling moths as mentholin or camphor. British perfumes and toilet preparations were selling well, and a considerable export trade was being done in these, especially with America and South Africa.

### Transport Dangers with Ferrosilicon

IN 1929 a bargeman died on board a lighter in Holland in consequence of breathing poisonous gases evolved from a cargo of ferrosilicon, which is an alloy of iron and silicon. Induced to investigate the cause of this fatality W. Schut and J. D. Jansen ("Rec. trav. chim.," 1932, 57, 321) state that poisoning was due to phosphine and arsine, which are evolved when ferrosilicon is in contact with water or moist air. Unless the alloy contains other metals, such as manganese or aluminium, these gases are evolved only from samples containing more than 25 per cent. of silicon. Alloys containing 40 to 60 per cent. of silicon have the property of disintegrating spontaneously. The reason for this is not clear, but as the evolution of gas is increased considerably, alloys of these compositions are very dangerous during transport or storage.

## Letter to the Editor

### Relatives Sought

SIR,—The relatives are sought of Mary Harrison, aged 10 years, whose mother died recently at Brandon House Nursing Home, Holly Walk, Leamington Spa. The father of the child, Norman Harrison, was a motor engineer of Bristol, who was killed some months before the child's birth, but is believed to be survived by two brothers, Godfrey Harrison, an engineer thought to be in Germany, and Stanley Harrison, a research chemist engaged in teaching in London. For the present, the interests of this child are being watched by a solicitor and medical men of Leamington. Anyone who is able to supply information regarding the uncles of the child is requested to communicate with Mrs. Norris, Holts House, Lees, Lancs. Mrs. Norris is the wife of Mr. W. H. H. Norris, B.A. (Cantab.), B.Sc. (Lond.), F.I.C., and is in direct touch with the child.—Yours faithfully,

RICHARD B. PILCHER.

The Institute of Chemistry,  
30 Russell Square, W.C.1.

## British Association of Chemists

### Growth of the London Section

At the 14th annual meeting of the London Section of the British Association of Chemists it was reported that there had been an increase of nearly 100 in the membership during the year and that the financial position was satisfactory, although there had been an increase in expenditure during the year.

Mr. H. M. MORGAN, chairman of the Section, commented on the considerable progress that had been made during the year and the increasing activities of the Section. He specially thanked Miss Wright, the hon. secretary of the London Section, and also the London Committee for their work, and referring to the special aid fund of the Association, which has been formed to provide assistance to members in cases of sickness not covered by unemployment insurance, urged the members to give this all the support they could.

The following officers were elected for the coming year: Chairman, Mr. H. M. Morgan; hon. secretary, Miss W. Wright; hon. treasurer, Mr. A. W. Lang; members of committee: Mr. A. J. Baker, Dr. A. W. Barrett, Dr. Paul Haas, Mr. W. Johnson, Mr. W. Garvie, Mr. W. C. Peck and Mr. A. W. H. Upton.

Mr. S. REGINALD PRICE, president of the Association, then addressed the meeting. Pointing out that the London Section is the largest of all the Sections of the Association, he said that in London the spirit of co-operation is very real. One of the principal objects of the Association was to improve the status of the profession, and a great deal had already been achieved in that direction.

Mr. C. B. WOODLEY, general secretary, who was thanked for the assistance he had given the London Section during the past year, giving a brief outline of the present activities of the Association, said that the unemployment insurance fund was in a strong position and during the past seven months had had to meet disbursements to an amount equal to that which had had to be met in any previous twelve months. During ten years more than £7,500 had been paid out in benefit. Fortunately, claims on the fund were decreasing, owing to the success of the appointments bureau service in finding positions for the unemployed members. Employers were making more and more use of the facilities afforded by the bureau, knowing that they could be confident of obtaining fully qualified men. The legal aid department also continued to be active in the interests of the members, and a considerable number of cases had been settled by negotiation since the principle of three months' notice was now generally recognised.

The meeting was followed by a smoking concert. During the evening Mr. A. J. C. Cosbie gave a demonstration of the uses of CO<sub>2</sub> and liquid air. By the courtesy of Imperial Chemical Industries, Ltd., Mr. Cosbie exhibited the company's scale model of a plant that will withstand pressures up to 1,000 lb. per sq. in.

## News from the Allied Industries

### Soap Industry

COMPETITIVE PRICE-CUTTING is taking place in the American soap trade. The incentive to this movement is said to come from Lever Bros., who have been enabled to reduce their prices by their low production costs.

### Beet Sugar

GERMANY'S SUGAR BEET CULTIVATION has declined during the current year by about 28.45 per cent., compared with the previous year. Of the 216 factories working in the sugar season 1931-32, only 205 will re-open for the 1932-33 season.

### Rubber

ACCORDING TO INFORMATION FROM BATAVIA tapping has been abandoned on 256 rubber estates in the Dutch East Indies, and 130 estates are being only partially tapped. The total untapped area is now 49,187 hectares (not including periodical tapping), or 13 per cent. of the total tappable area.

### Non-Ferrous Metals

REPRESENTATIVES OF THE CORNISH TIN MINING INDUSTRY attended a conference at Camborne on May 19 to consider what steps might be taken to support Lieutenant-Commander Agnew, M.P., in his recent appeal in the House of Commons for assistance for Cornish mining. The meeting appointed a small committee to investigate suggestions which were put forward and report to a conference at an early date.

IT IS UNDERSTOOD THAT A NEW SCHEME has been devised for the control of tin export and production, and it has the approval of all the Malayan mining chambers. This scheme involves a stricter limitation of production, but not a complete stoppage of production, and there will be complete suspension of tin exports for two months from June 1, 1932. During the two months' "export holiday" and for one month following, the mines are to produce up to only 13½ per cent. of their 1929 capacity, while for the following nine months production is to be limited to 40 per cent. of capacity. The limited stocks of the metal created during the two months "export holiday" will be gradually liquidated during the following ten months, *i.e.*, during the period of one month's production at 13½ per cent. of 1929 capacity, and nine months at 40 per cent.

### Paper Industry

THE REOPENING OF THE GROUND WOOD PULP MILLS of the Chicoutimi Pulp Co., at Chicoutimi, Quebec, is expected as a result of the decision of the Quebec Government to exempt the industry from payment of water tax for five years. Some 2,000 men may secure employment as the result of these arrangements. The water tax in question amounts to 85 cents per ton of pulp. In approaching the provincial Government, the interests concerned contended that if the mills were opened, finance could be obtained from the banks, and an immediate market existed in European countries for 40,000 tons of pulp. A contract for 30,000 tons was waiting in Great Britain, and 12,000 tons could be exported to France during the coming season. The mills of the Chicoutimi Pulp Co. have a rated capacity of 350 tons of ground wood pulp daily, and an annual capacity of approximately 100,000 tons.

SHAREHOLDERS OF BOWATER'S PAPER MILLS, LTD., have approved resolutions authorising the creation of 500,000 preference shares of £1 each, carrying a cumulative dividend of 6½ per cent., and the increase of the ordinary capital from £300,000 to £500,000. Mr. Eric V. Bowater, who presided at the shareholders' meeting on May 19, explained that negotiations had been successfully concluded resulting in the controlling interest of W. V. Bowater and Sons, Ltd., being acquired by the company, and through that company a substantial interest had been acquired in the capital of Bowater's Mersey Paper Mills, Ltd. This promises to be a good investment, for the mills, which came into full production in 1931, produced 45,000 tons of newsprint during the year, while the estimated output for the present year should reach 55,000 tons. Even more satisfactory was his statement that the whole of the output had been disposed of until the end of 1935. Mr. Bowater also made some encouraging references to the operations of the Bowater's Paper Mills Co.

### Safety Glass

A FIRE BROKE OUT at the premises of the Triplex Safety Glass Co., Eckersall Road, King's Norton, on Friday, May 20. The fire was confined to a ground floor garage, and after three-quarters of an hour's work the firemen were able to leave. Three firemen received slight cuts and burns, and three employees were also injured in the successful effort to get out four cars from the garage.

### Chilean Nitrate

THE FORMATION IS ANNOUNCED in New York of a friendly shareholders' protective committee for the Chilean nitrate industry, resembling a similar committee recently formed in London. The chairman will be Mr. Henry Fletcher, formerly United States Ambassador to Chile, and the members include Mr. Charles Mitchell, chairman of the National City Bank; Mr. Stewart Inglehart, of T. W. R. Grace and Co.; and Mr. Solomon Guggenheim, of Guggenheim Brothers. The purpose of the committee is "the protection of the interests of creditors and security holders, and their representation in any reorganisation plan."

## The Institute of Physics

### Opening of New Reading Room

IN opening the new reading rooms at the Institute of Physics on May 24, Lord Rutherford, president, explained that they were provided to give greater opportunities to the members of the Institute and its participating societies. Members could meet each other here for the purpose of discussing the problems of physics. Also, through the co-operation of the Physical and Optical Societies and the other participating societies, a large number of books and periodicals had been provided. The intention was also to gather together a small library of text books and reference books, and the nucleus of such a library already existed. Some of the valuable old books belonging to the Physical and Optical Societies were open for inspection. The president expressed the Institute's high appreciation of the generosity of the Royal Commissioners for the Exhibition of 1851 in allocating some of their rooms to the Institute.

### Election of Officers

At the annual general meeting of the Institute, held immediately afterwards, it was announced that the new Board, which will take office on October 1, would be constituted as follows: President, Lord Rutherford; past presidents, Sir Frank Dyson and Dr. W. H. Eccles; vice-presidents, R. S. Clay, C. S. Anderson, Professor H. S. Allen and J. V. Drysdale; hon. treasurer, Major C. E. S. Phillips; hon. secretary, Professor A. O. Rankine; non-official members, Professor W. L. Bragg, Professor J. A. Crowther, Professor A. Fowler, Sir Richard Gregory, Sir Henry Lyons, R. A. Watson Watt, R. S. Whipple and D. Orson Wood; nominated by participating societies: Faraday Society—Emil Hatschek, Optical Society—Frank Twyman, Physical Society—Ezer Griffiths and D. Owen, Royal Meteorological Society—F. J. W. Whipple, British Institute of Radiology—G. Shearer; Sir Frank Dyson and Sir William Bragg were elected hon. fellows of the Institute.

### Institute Awards

The institute announces that the B.O.I.M.A. Prize for the best paper published in the "Journal of Scientific Instruments" during 1931 is to be equally divided between Mr. H. C. H. Townend, of the National Physical Laboratory, for his paper on "A Daylight Factor Integrator," and Professor E. W. Marchant, Mr. J. K. Burkitt and Mr. A. H. Langley, of the University of Liverpool, the joint authors of the paper "A Portable String Galvanometer for use at Moderate Frequencies"; and the Institute of Physics Prize for the best contribution to the laboratory and workshop notes in the Journal has been awarded to Mr. F. W. Kirkby, of the Royal Aircraft Establishment, Farnborough, for his note: "Improved Method of holding Mirrors for Sextants and other Instruments."

## Inventions in the Chemical Industry

### Specifications Accepted and Applications for Patents

THE following information is prepared from the Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25 Southampton Buildings, London, W.C.2, at 1s. each. The numbers given in "Specifications Accepted" are those under which the specifications are printed. Abridgments of "Complete Specifications open to Public Inspection" will not be published until they have been accepted or the applications have become void. The dates given are those claimed under the International Convention. The numbers in "Applications for Patents" are for reference in all correspondence up to the acceptance of the complete specifications. In the case of applications for patents under the International Convention, the priority date (that is, the original application date abroad which the applicant desires shall be accorded to the patent) is given in brackets, with the name of the country of origin. Specifications of such applications are open to inspection at the Patent Office on the anniversary of the date given in brackets, whether or not they have been accepted.

#### Specifications Accepted with date of Application

- APPARATUS FOR DRYING AIR OR OTHER GASES. Hall and Kay, Ltd., H. Kay, J. H. Hall, and A. Myers. Nov. 6, 1930. 372,740.
- PROCESS FOR DISTILLING COALS. W. E. Trent. Nov. 11, 1930. 372,805.
- DRYING AND OR FILTRATION OF MIXTURES OF LIQUIDS AND SOLIDS. H. Waring and Goodlass Wall and Lead Industries, Ltd. Dec. 11, 1930. 372,700.
- MANUFACTURE AND PRODUCTION OF COLOURED MASSES, AND SOLUTIONS HEREOF. J. Y. Johnson (*I. G. Farbenindustrie*). Dec. 31, 1930. 372,701.
- FURNACES FOR THE HEAT-TREATMENT OF METALLIC OR OTHER BODIES. Wellman Smith Owen Engineering Corporation, Ltd., and H. W. Soward. Jan. 29, 1931. 372,744.
- PRODUCTION OF LUBRICATING OILS. D. A. Howes and Imperial Chemical Industries, Ltd. Jan. 30, 1931. 372,763.
- REMOVAL OF ARSENIC FROM SULPHUR. J. S. Dunn and Imperial Chemical Industries, Ltd. Feb. 11, 1931. 372,781.
- PRODUCTION OF HYDROCARBONS SUITABLE FOR USE AS MOTOR SPIRIT. W. I. Jones and Imperial Chemical Industries, Ltd. Feb. 11, 1931. 372,783.
- TREATMENT OF AMMONIA LIQUORS OBTAINED FROM THE CARBONISATION OF COAL. T. Coxon and Imperial Chemical Industries, Ltd. Feb. 11, 1931. 372,801.
- MANUFACTURE OF CELLULOSE ACETATE. W. W. Triggs (*Ruth-Aldo Co., Inc.*). Feb. 19, 1931. 372,844.
- PROCESS OF IMPROVING TEXTILE MATERIALS. A. G. Bloxam (*Soc. of Chemical Industry in Basle*). Feb. 27, 1931. 372,855.
- PREPARATION OF HOMOLOGUES AND DERIVATIVES OF PHENANTHRIDINE. G. T. Morgan and L. P. Walls. Mar. 2, 1931. 372,850.
- METHOD OF DE-GUMMING AND STABILISING HYDROCARBON DISTILLATES. Gulf Refining Co. May 7, 1930. 372,928.
- METHOD OF PROTECTING LEAD AGAINST CORROSION. Compagnie Générale D'Electricité. May 7, 1930. 372,936.
- TREATMENT OF NICKEL-COPPER SOLUTIONS TO REMOVE IRON PRESENT THEREIN. Falconbridge Nikkelverk Aktieselskap. May 22, 1930. 372,958.
- METALLURGICAL AND CHEMICAL PROCESSES CARRIED OUT IN ELECTRIC RADIATION FURNACES, AND A FURNACE FOR USE IN CARRYING OUT THE PROCESSES. A. H. Pehrson. June 2, 1931. 372,964.
- APPARATUS FOR CHARGING, DISCHARGING AND TURNING THE MATERIAL IN ROTARY-HEARTH FURNACES. I. G. Farbenindustrie. Aug. 29, 1930. 372,965.
- MANUFACTURE OF CONVERSION PRODUCTS OF HIGHER PARAFFIN HYDROCARBONS. A. Carpienel (*I. G. Farbenindustrie*). Feb. 6, 1931. 372,784.
- MANUFACTURE OF CONVERSION PRODUCTS OF HIGHER PARAFFIN HYDROCARBONS. A. Carpienel (*I. G. Farbenindustrie*). Feb. 6, 1931. 372,785.
- SULPHONATED CONDENSATION PRODUCTS. Compagnie Nationale de Matières Colorantes et Manufactures de Produits Chimiques du Nord Reunies, Etablissements Kuhlmann. Sept. 24, 1930. 373,006.
- MANUFACTURE OF SULPHURIC ACID BY THE CONTACT PROCESS. Metallges. Akt.-Ges. Oct. 25, 1930. 373,029.
- PRODUCTION OF ALKALI NITRATES. Kali-Forschungs-Anstalt Ges., O. Kaselitz and B. Uebler. Nov. 6, 1931. 373,060.
- MANUFACTURE OF 1-ALKOXY AND 1-SUBSTITUTED-ALKOXY-2-ACYLAMINO-BENZENEARSONIC ACIDS. I. G. Farbenindustrie. Nov. 29, 1930. 373,071.
- MANUFACTURE OF AMINO-SUBSTITUTED ORGANIC ARSENIC COMPOUNDS. I. G. Farbenindustrie. Jan. 10, 1931. 373,085.

#### Complete Specifications open to Public Inspection

- MANUFACTURE OF SYNTHETIC RUBBER. E. I. Du Pont de Nemours & Co., May 14, 1931. 21161/31.
- PROCESS FOR THE PRODUCTION OF ALKALI SULPHATES AND SULPHUR. Metallges. Akt.-Ges. May 13, 1931. 27032/31.
- PROCESS FOR THE MANUFACTURE OF  $\alpha$ -PHENYL ETHYLENE  $\beta$ -HALOGEN HYDRINS. I. G. Farbenindustrie. May 13, 1931. 6728/32.
- PROCESS OF ISOLATING  $\alpha$ -PHENYL ETHYLENE  $\alpha\beta$ -DICHLORIDE. I. G. Farbenindustrie. May 13, 1931. 6729/32.
- MANUFACTURE OF UNSATURATED SUBSTITUTED TERTIARY ACETAMIDES HAVING A STRONG HYPNOTIC ACTION. Dr. K. Ziegler. May 13, 1931. 7552/32.

- MANUFACTURE OF LEATHER. Chemische Fabrik Siegfried Kroch Akt.-Ges. and J. H. Epstein Akt.-Ges. May 13, 1931. 10361/32.
- PROCESS FOR MANUFACTURING HARD OBJECTS OF SILICIFIED CARBON OR LIKE SUBSTANCES. A.-L. Mingard. May 11, 1931. 10864/32.
- PROCESS FOR THE MANUFACTURE OF CONDENSATION PRODUCTS FROM 2,6-DIAMINOPYRIDINE AND ITS DERIVATIVES. Schering-Kahlbaum Akt.-Ges. May 13, 1931. 11388/32.
- METHOD OF PROTECTING METAL OBJECTS AND THE LIKE NORMALLY EXPOSED TO ATMOSPHERIC CONDITIONS. Chemieprodukte Ges. May 11, 1931. 13343/32.
- STABILISATION OF OILS AND FATS. Swift and Co. May 12, 1931. 13600/32.
- PROCESS FOR EFFECTING OR FACILITATING THE DECOMPOSITION OF SUBSTANCES. A. Kilgus. May 13, 1931. 13646/32.
- DISCHARGE PASTES AND DISCHARGE PROCESSES. E. I. Du Pont de Nemours and Co. May 15, 1931. 13689/32.
- MANUFACTURE OF HYDROCYANIC ACID. Roessler and Hasslacher Chemical Co. May 14, 1931. 13690/32.
- REACTION PRODUCTS OF KETONES AND AMINES. Naugatuck Chemical Co., May 16, 1931. 13704/32.

#### Applications for Patents

- MANUFACTURE OF NITROGENOUS FERTILISERS. Adco, Ltd., H. B. Hutchinson, E. H. Richards, and K. Zembyrski. May 18, 14103.
- MANUFACTURE AND APPLICATION OF VAT DYE STUFFS. I. B. Anderson, Imperial Chemical Industries, Ltd., D. C. R. Jones, and R. F. Thomson. May 20. 14418.
- MANUFACTURE OF CELLULOSE ESTERS. A. G. Bloxam (*Soc. of Chemical Industry in Basle*). May 18. (June 23, '31.) 14145.
- HYDROGENATION OF ORGANIC COMPOUNDS. G. N. Deane. May 19. 14278.
- HYDROGENATION OF CARBONACEOUS SUBSTANCES. U. A. R. Dudley. May 20. 14380.
- HYDROGENATION OF HYDROCARBONS. U. A. R. Dudley. May 20. 14300.
- MANUFACTURE OF MAGNESIUM. R. Fouquet and G. Gire. May 20. (France, May 21, '31.) 14408.
- MANUFACTURE OF AZO-DYE STUFFS. W. W. Groves. (*I. G. Farbenindustrie*). May 17. 14046.
- MANUFACTURE OF SODIUM NITRATE FROM SODIUM BICARBONATE. J. Y. Johnson (*I. G. Farbenindustrie*). May 19. 14258.
- DYEING ACETATE SILK. J. Y. Johnson (*I. G. Farbenindustrie*). May 19. 14259.
- VULCANISATION OF RUBBER. J. Y. Johnson (*I. G. Farbenindustrie*). May 19. 14260.
- MANUFACTURE OF ALCOHOLS. J. Y. Johnson (*I. G. Farbenindustrie*). May 19. 14261.
- MANUFACTURE OF DERIVATIVES OF BARRATURIC ACID SERIES, ETC. I. G. Farbenindustrie. May 17. (Germany, May 16, '31.) 14040.
- PHOTOGRAPHIC EMULSIONS. I. G. Farbenindustrie. May 19. (Germany, May 20, '31.) 14274.
- TREATMENT OF CELLULOSE ESTERS. I. G. Farbenindustrie. May 19. (Germany, May 19, '31.) 14299.
- MANUFACTURE OF DYE STUFFS OF THE ANTHRAQUINONE SERIES. I. G. Farbenindustrie. May 20. (Germany, May 20, '31.) 14371.
- RELEASING PRESSURE UPON VISCOUS LIQUIDS CONTAINING SOLID MATTER IN SUSPENSION. Imperial Chemical Industries, Ltd. May 18. 14184.
- MANUFACTURE OF PROPELLANT EXPLOSIVES. Imperial Chemical Industries, Ltd., and E. Whitworth. May 18. 14185.
- HYDROGENATION OF AROMATIC HYDROCARBONS. Imperial Chemical Industries, Ltd., and E. D. Kamm. May 18. 14186.
- FUELS IN PASTE, ETC., FORM. Imperial Chemical Industries, Ltd. May 19. 14238.
- FUEL OIL FOR INTERNAL-COMBUSTION ENGINES. Lancashire Tar Distillers, Ltd. May 18. 14102, 14103.
- PURIFICATION AND DECOLOURISATION OF AROMATIC HYDROXY-CARBOXYLIC ACIDS. Monsanto Chemical Works, Ltd., and S. Smith. May 17. 14047.
- SEPARATION OF AMINES. Röhm and Haas Co. May 17. (United States, May 18, '31.) 14062.
- METHODS OF PRODUCING ACTIVE SILICA ACID. Salvis Akt.-Ges für Nahrungsmittel und Chemische Industrie. May 21. (Germany, May 21, '31.) 14486.



## From Week to Week

COMPETITORS in the Chemical Industry Lawn Tennis Tournament are reminded that results of all first round matches must reach the Editor of THE CHEMICAL AGE not later than 9.30 a.m. on Wednesday next, June 1.

NEGOTIATIONS ARE IN PROGRESS between the Egyptian and German Governments for the exchange of 30,000 bales of cotton against chemical fertilisers.

A NEW FACTORY, operated by the Blarney Manufacturing Company, has recently been established in Dublin for the manufacture, packing and distribution of cornflour, starch powders, bath salts, plate powders and similar products.

PATENT LAW JURISTS from Europe and America, who are at present in congress in London, were entertained at a banquet and dance at Imperial Chemical House, Westminster, on Tuesday night, May 17. A company of over 300 were the guests of the Trade Marks, Patents and Designs Federation.

IT IS UNDERSTOOD that the British Silk Dyeing Co.'s works at Balloch, Dumbartonshire, are likely to be reopened near the end of October, and will employ about 300 workers. The company has been re-organised, and a Swiss syndicate has taken 50 per cent. of the shares in the company.

DR. J. W. MELLOR, hon. general secretary of the Ceramic Society, and Principal of the Pottery Department of the North Staffordshire Technical College, has been elected an honorary member of the American Ceramic Society, "in recognition of achievements of exceptional value in ceramics." There are only 14 honorary members of the American Ceramic Society, which is the largest society of its kind in the world, having a total membership of about 2,500.

A FRENCH PROPOSAL for the absolute prohibition of germ warfare was accepted by the Geneva Special Committee on Chemical and Bacteriological Warfare on May 20. The proposal will now be submitted to the Disarmament Conference. Great Britain, supported by the United States, secured the rejection of a German proposal to abolish all military forces trained for the installation of and experiment in poison gas equipment.

IMPORTANT CONTRIBUTIONS to Canada's silver production are now being made by Noranda Mines, Ltd., Noranda, Quebec, and by the Hudson Bay Mining and Smelting Co., Ltd., Flin Flon, Manitoba. The blister copper produced from ores obtained from the properties of these two companies is shipped to the Canadian Copper Refiners' plant at Montreal East, where the silver is recovered. The Yukon Territory has for several years been producing annually about four million ounces of silver, derived from the argentiferous lead ores of the Mayo district.

PRICE, STUFFIELD AND CO., LTD., who since the foundation of the business have been at 6 Fenchurch Buildings, announce that on June 1 they are moving to larger offices at Dominion House, 110 Fenchurch Street, E.C.3. Their telegraphic address and telephone number remain as before. This change is necessary owing to their steadily increasing business as sulphur and chemical merchants and as representatives for Great Britain and the Colonies of the "Acti-carbone" activated carbons and processes of solvent recovery, etc. Many large plants are at present in hand in this country for the recovery of solvents in various industries such as indiarubber, dry cleaning, artificial leather manufacture, etc.

THE COMMITTEE OF AWARD of the New York Commonwealth Fund Fellowships have made the following appointments to fellowships tenable by British graduates in American universities for the two years beginning September, 1932:—J. H. Chesters, University of Sheffield, to the University of Illinois, in metallurgy; W. A. Macfarlane, Balliol College, Oxford, to the University of California, in physical chemistry; James Pace, University of Liverpool, to Princeton University, in physical chemistry; W. C. Price, University of Wales, University College of Swansea, to Johns Hopkins University, in physics; A. S. Roy, University of St. Andrews, to the University of Michigan, in physics; and E. T. Stiller, University of Glasgow, and University of St. Andrews, to the Rockefeller Institute, in biochemistry.

DAMAGE ESTIMATED at £2,000 was caused by a fire which broke out on Monday, May 23, at the Irwell Bank Dyeworks, Radcliffe, carried on by Robinson and Co. The works had been closed since Thursday night for the Whitsun holidays, but on Monday afternoon James Emerson, a mechanic engaged on repair work, noticed smoke coming from a storeroom which contained a large number of bundles of dyed yarn. The brigade arrived to find that the fire had obtained a good hold on the building and that parts of the roof had fallen in. In about half an hour they got control, and, while a large part of the yarn was destroyed or damaged, they succeeded in saving the offices and adjoining dwelling-houses. The storeroom had not been entered from the time the works closed down, and it is supposed that the fire originated through spontaneous combustion.

MRS. KATE GREATOREX, of Mytton Hall, Salop, who died on December 20, widow of Joseph Robert Greatorex, has left £3,000 to Manchester University for scholarships for applied and organic chemistry.

EDITORIAL REPRESENTATIVES of the leading Danish newspapers, who arrived in London by air from Copenhagen on Monday, May 23, was entertained at lunch at Imperial Chemical House, by Mr. W. J. U. Woolcock, chairman of the Overseas Committee of the Federation of British Industries.

IT IS REPORTED that the All-British Exhibition to be held in Copenhagen during September is certain to be completely filled, and that more applications have been received than can be accepted. British exports to Denmark in the first quarter of this year increased considerably compared with last year. This was all the more striking because the total imports into Denmark decreased considerably.

THE BOARD of the Malehurst Barytes Co., Ltd., Minsterley, has been re-organised. The new board consists of the following: Mr. L. P. O'Brien (chairman), Mr. C. S. Asbury, Mr. Alexander Reid, Mr. J. C. Shepherd, and Mr. John Sutherland. The policy of the board is to increase the production of crude and ground barytes in this country.

AT THE RECENT CONFERENCE of the Textile Institute, held at Leamington, the Institute medal for distinguished service to the textile industry was awarded by Mr. Wilfred Kershaw, head of the research department of the Bleachers' Association, Ltd. Mr. Kershaw has been for many years a well-known member of the Manchester Sections of the Society of Dyers and Colourists and the Society of Chemical Industry.

RECENT WILLS include:—John Galloway Raphael, 6 Broad Street Place, London, a director of the British Silk Dyeing Co., and at one time a director of British Celanese, a member of the Committee of Control of the International Tin Pool, and for some years confidential secretary to the late Captain Loewenstein, the Belgian financier. £2,256 (net personalty nil).—Colonel James Crean, J.P., of Westcliffe Road, Birkdale, formerly of James Crean and Son, Ltd., oil refiners, of Liverpool. £26,760 (net personalty £24,694.)

MEMBERS of the Chemical Society, the Society of Chemical Industry, the Mining Institute of Scotland and the Royal Scottish Society of Arts made a combined visit to the Billingham Works of Imperial Chemical Industries, Ltd., on May 23, where they were entertained by Mr. Applebey and other officials of the company. The visit had for its main purpose the examination of the coal hydrogenation plant. The party were conveyed by bus over the very extensive works so as to enable them to inspect the plant. The hydrogen plant and compressors, carbon dioxide plant, sulphate plant, and other appliances were included in the tour of inspection.

THE CONTINUATION of the AGREEMENT between the Polish manufacturers of superphosphate is fraught with difficulty, as the market is greatly disorganised. According to the "Zentralblatt für die Kunstdünger Industrie," a heavy decline in prices is anticipated, even should the agreement be determined. The production of superphosphate in Poland was only about 60,000 tons in 1931, against 297,000 tons in 1930, and 370,000 tons in 1929. Domestic sales reached 100,000 tons last year, compared with 187,000 tons in 1930 and 304,000 tons in 1929, while exports fell to 20,500 tons in 1931, against 58,000 tons and 22,000 tons respectively in the two previous years. Stocks of superphosphate in the Polish factories on January 1, 1932, were estimated at more than 100,000 tons.

A REPORT HAS BEEN PUBLISHED on the proceedings at the International Conference on Safety in Mines which was held at Buxton in 1931, and was attended at the invitation of the Safety in Mines Research Board by ten representatives of the Belgian, French, German, and American mine safety research organisations. The safer use of mining explosives was chosen as the principal subject for discussion on account of the importance of the problem and of the investigations thereon carried out in each of the countries represented. Addresses were given on "Simultaneous Shot-firing: the Position in Belgium" (Ad. Breyer, Belgium), "The Testing of Explosives" (M. Audibert, France), "Investigations on the Igniting Power of Explosives" (E. Beyling, Germany), and "The Application of Schlieren Photograph in Researches on Explosives" (W. Payman, England). At the conclusion of the conference, tentative arrangements were made for future general international co-operation on safety in mines research, subject to ratification by the organisations concerned. Copies of the report (S.M.R.B. Paper No. 74, price 1s. 6d. net) are obtainable from H.M. Stationery Office, either directly or through any bookseller.

### Obituary

JAMES DUNLOP, late of Nobels Explosives Co., Ltd., Stevenston, whom he served for 41 years, aged 86.

DR. ARTHUR COOPER, a past president of the Iron and Steel Institute, aged 83. In 1881 he established the first steel plant working on the basic Bessemer process.

## Weekly Prices of British Chemical Products

### Review of Current Market Conditions

The following notes on the chemical market conditions in Great Britain are based on direct information supplied by the British manufacturers concerned, and unless otherwise qualified the figures quoted apply to fair quantities, net and naked at makers' works. Where no locality is indicated, the prices are general for the United Kingdom. Particulars of the London chemical market are specially supplied to THE CHEMICAL AGE by R. W. Greeff and Co., Ltd., and Chas. Page and Co., Ltd., and those of the Scottish chemical market by Chas. Tennant and Co., Ltd.

DURING the current week prices have been steady in the London chemical market, with a fair demand. In general there is rather more optimism to be noted. There is no change in the market for coal tar products, prices remaining firm. Business opened slowly on the Manchester chemical market this week after the holidays, and although there has been a pretty general resumption of deliveries to consumers against old contracts on about the same scale that obtained before the holidays there has not so far been much in the way of new business. Most of the orders that have been placed this week have related to comparatively small quantities, with deliveries extending not very far forward. So far as prices are concerned, however, there has been little change in the situation, although some easing of prices in the case of the lead and copper products has been a feature. Steady and consistent business is reported in the Scottish chemical market.

#### General Chemicals

ACETONE.—LONDON: £65 to £68 per ton; SCOTLAND: £66 to £68 ex wharf, according to quantity.

ACID, ACETIC.—Tech. 80%, £37 5s. to £39 5s.; pure 80% £38 5s. to £40 5s.; tech., 40%, £19 15s. to £21 15s.; tech., 60%, £28 10s. to £30 10s. SCOTLAND: Glacial 98/100%, £48 to £50; pure 80%, £38 5s.; tech. 80%, £37 5s. d/d buyers' premises Great Britain. MANCHESTER: 80%, commercial, £39; tech. glacial, £52.

ACID, BORIC.—SCOTLAND: Granulated commercial, £26 10s. per ton; B.P. crystals, £35 10s.; B.P. powder, £36 10s. in 1-cwt. bags d/d free Great Britain in one-ton lots upwards.

ACID, CHROMIC.—11d. per lb., less 2½% d/d U.K.

ACID, CITRIC.—1s. 1d. per lb. LONDON: 1s. 1d., less 5%. MANCHESTER: 1s. 1½d.

ACID, CRESYLIC.—97/99%, 1s. 7d. to 1s. 9d. per gal.; 99/100%, 1s. 10d. to 2s.

ACID FORMIC.—LONDON: £50 per ton. \*£52.

ACID, HYDROCHLORIC.—Spot, 3s. 9d. to 6s. carboy d/d according to purity, strength and locality. SCOTLAND: Arsenical quality, 4s.; dearsenicated, 5s. ex works, full wagon loads.

ACID, LACTIC.—LANCASHIRE: Dark tech., 50% by vol., £23 10s. per ton; 50% by weight, £27 10s.; pale tech., 50% by vol., £27; 50% by weight, £32; 80% by weight, £52; edible, 50% by vol., £40. One-ton lots ex works, barrels free.

ACID, NITRIC.—80° Tw. spot, £20 to £25 per ton makers' works, according to district and quality. SCOTLAND: 80°, £23 ex station full truck loads.

ACID, OXALIC.—LONDON: £47 per ton in casks, £48 10s. in kegs. \*£49. SCOTLAND: 98/100%, £50 to £53 ex store. MANCHESTER: £2 7s. 6d. per cwt., ex store.

ACID, SULPHURIC.—Average prices f.o.r. British makers' works, with slight variations owing to local considerations: 140° Tw. crude acid, £3 per ton; 168° Tw. arsenical £5 10s.; 168° Tw. non-arsenical, £6 15s. SCOTLAND: 144° quality, £3 12s. 6d.; 168°, £7; dearsenicated, 20s. per ton extra.

ACID, TARTARIC.—1s. 0½d. per lb. SCOTLAND: B.P. crystals, 1s. 1½d. to 1s. 2d. less 5% carriage paid. MANCHESTER: 1s. 0½d.

ALUM.—SCOTLAND: Lump potash, £9 per ton ex store.

ALUMINA SULPHATE.—LONDON: £8 5s. to £9 10s. per ton. \*£7 10s. SCOTLAND: £8 to £8 10s. ex store.

AMMONIA, ANHYDROUS.—Spot, 10d. per lb. d/d in cylinders. SCOTLAND: 10d. to 1s. containers extra and returnable.

AMMONIA, LIQUID.—SCOTLAND: 80°, 2½d. to 3d. per lb. d/d, according to quantity.

AMMONIUM CARBONATE.—SCOTLAND: Lump, £36 per ton; powdered, £38, in 5-cwt. casks d/d U.K. stations or f.o.b. U.K. ports.

AMMONIUM CHLORIDE.—£37 to £45 per ton, carriage paid. LONDON: Fine white crystals, £19 to £20. (See also Salammmoniac.)

AMMONIUM CHLORIDE (MURIATE).—SCOTLAND: British dog tooth crystals, £32 to £35 per ton, carriage paid according to quantity. (See also Salammmoniac.)

AMMONIUM BICHRIMATE.—8d. per lb. d/d U.K.

ANTIMONY OXIDE.—SCOTLAND: Spot £27 per ton, c.i.f. U.K. ports.

ANTIMONY SULPHIDE.—Golden 6½d. to 1s. 1½d. per lb.; crimson, 1s. 4d. to 1s. 6d. per lb. according to quality.

ARSENIC.—LONDON: £24 10s. c.i.f. main U.K. ports for imported material; Cornish nominal, £26 10s. f.o.r. mines. SCOTLAND: White powdered £27 ex wharf; spot, £27 10s. ex store. MANCHESTER: White powdered Cornish, £27 at mines.

ARSENIC SULPHIDE.—Yellow 1s. 6d. to 1s. 8d. per lb.

BARIUM CHLORIDE.—£11 to £11 10s. per ton.

\* Prices quoted by other manufacturers.

BISULPHIDE OF LIME.—£7 10s. per ton f.o.r. London, packages free.

BLEACHING POWDER.—Spot 35/37% £7 19s. per ton d/d station in casks, special terms for contract. SCOTLAND: £8 15s. in 5/6 cwt. casks.

BORAX, COMMERCIAL.—Granulated £15 10s. per ton, powder £17, packed in 1-cwt. bags, carriage paid any station Great Britain. Prices are for 1-ton lots and upwards.

CADMIUM SULPHIDE.—3s. 6d. to 3s. 9d. per lb.

CALCIUM CHLORIDE.—Solid 70/75% spot £5 5s. to £5 15s. per ton d/d station in drums. SCOTLAND: £5 5s. to £5 15s., according to quantity and point of delivery.

CARBON BISULPHIDE.—£30 to £32 per ton, drums extra.

CARBON BLACK.—4½d. to 5½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£45 to £55 per ton, drums extra.

CHROMIUM OXIDE.—10d. to 10½d. per lb. according to quantity d/d U.K. Green 1s. 2d. per lb.

CHROMETAN.—Crystals 3½d. per lb. Liquor £19 per ton d/d.

COPPERAS (GREEN).—SCOTLAND: £3 15s. per ton, f.o.r., or ex works.

CREAM OF TARTAR.—LONDON: £5 2s. 6d. to £5 3s. 6d. per cwt.

FORMALDEHYDE.—LONDON: £28 to £28 10s. per ton. \*£30. SCOTLAND: 40%, £28 10s. ex store.

HYDROGEN PEROXIDE.—LONDON: \*100 vols. 10d. per lb.

LAMPBLACK.—£46 to £50 per ton.

LEAD ACETATE.—LONDON: White, £40 to £42 per ton. Brown £1 per ton less. \*£40 and £39 respectively ex wharf London. SCOTLAND: White Crystals £42 to £44 c.i.f. U.K. ports. Brown £1 per ton less. MANCHESTER: White, £36; Brown, £34 10s.

LEAD, NITRATE.—£28 10s. to £29 per ton.

LEAD, RED.—SCOTLAND: £28 10s. per ton d/d buyer's works.

LEAD, WHITE.—SCOTLAND: £40 per ton carriage paid.

LITHOPONE.—30%, £20 to £22 per ton.

MAGNESITE.—SCOTLAND: Ground Calcined £9 per ton ex store.

METHYLATED SPIRIT.—61 O.P. Industrial 1s. 8d. to 2s. 3d. gal. Pyridinised Industrial, 1s. 10d. to 2s. 5d. Mineralised, 2s. 9d. to 3s. 3d. 64 O.P. 1d. extra in all cases. Prices according to quantities. SCOTLAND: Industrial 64 O.P., 1s. 8d. to 2s. 3d.

NICKEL AMMONIUM SULPHATE.—£38 per ton d/d.

NICKEL SULPHATE.—£38 per ton d/d.

POTASH, CAUSTIC.—£30 to £33 per ton. LONDON and MANCHESTER: £42.

POTASSIUM BICHRIMATE.—Crystals and Granular, 5d. per lb. net d/d U.K. Discount according to quantity. Ground 5½d. LONDON: 5d. per lb. with usual discounts for contracts. SCOTLAND: 5d. d/d U.K. or c.i.f. Irish Ports with allowance for contracts. MANCHESTER: 5d.

POTASSIUM CARBONATE.—SCOTLAND: 96/98% spot £28 per ton ex store. LONDON: £31 10s. to £32. MANCHESTER: £31 to £32.

POTASSIUM CHLORATE.—3½d. per lb. export London in 1-cwt. kegs. LONDON: £37 to £40 per ton. SCOTLAND: 99½/100% powder, £34. MANCHESTER: £36.

POTASSIUM CHROMATE.—6½d. per lb. d/d U.K.

POTASSIUM NITRATE.—SCOTLAND: Refined Granulated £28 per ton c.i.f. U.K. ports. Spot £30 per ton ex store.

POTASSIUM PERMANGANATE.—LONDON: 8½d. to 9d. per lb. SCOTLAND: B.P. crystals, 8½d. MANCHESTER: Commercial, 8½d.; B.P., 8½d.

POTASSIUM PRUSSIAN.—LONDON: 8½d. to 9d. per lb. SCOTLAND: Yellow spot material, 8½d. ex store. MANCHESTER: Yellow, 8½d.

SALAMMONIAC.—First lump spot, £42 17s. 6d. per ton d/d in barrels.

SODA ASH.—58% spot, £6 per ton f.o.r. in bags, special terms for contracts.

SODA, CAUSTIC.—Solid 76/77° spot £14 10s. per ton d/d station. SCOTLAND: Powdered 98/99% £17 10s. in drums, £18 15s. in casks. Solid 76/77% £14 10s. in drums. 70/72% £14 12s. 6d. carriage paid buyer's station, minimum 4-ton lots; contracts 10s. per ton less. MANCHESTER: £12 15s. to £14 contracts.

SODA CRYSTALS.—Spot £5 to £5 5s. per ton d/d station or ex depot in 2-cwt. bags.

SODIUM ACETATE.—£21 to £22 per ton.

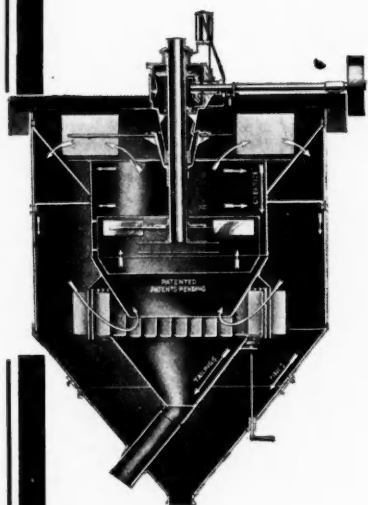
SODIUM BICARBONATE.—Refined spot £10 10s. per ton d/d station in bags. SCOTLAND: Refined recrystallised £10 10s. ex quay or station. MANCHESTER: £10 10s.

SODIUM BICHRIMATE.—Crystals cake and powder 4d. per lb. net d/d U.K. discount according to quantity. Anhydrous 5d. per lb. LONDON: 4d. per lb. with discounts for quantities. SCOTLAND: 4d. delivered buyer's premises with concession for contracts. MANCHESTER: 4d. less 1 to 3½% contracts, 4d. spot lots.

SODIUM BISULPHIDE POWDER.—60/62%, £16 10s. per ton d/d 1-cwt. iron drums for home trade.

(Continued on page 506.)

# Recent Orders for Dustless Raymond Equipment.



One 5-Roller Raymond Mill grinding **TALC** from  $\frac{1}{2}$ " down to 98% minus 200 mesh. Capacity  $2\frac{1}{4}$  tons per hour.

One "Baby" Raymond Mill grinding **LIME-STONE** for Whiting. Capacity 600 pounds per hour 99% through 325 mesh.

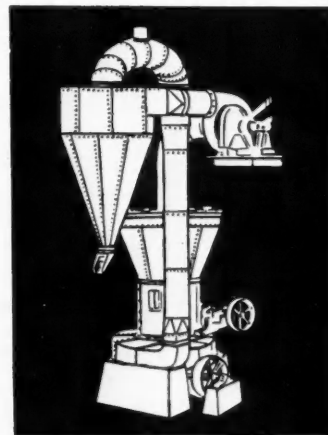
One Number "o" Raymond Pulveriser grinding **HYDRATED LIME** at the rate of  $2\frac{1}{2}$  to 3 tons per hour.

One Number "oooo" Raymond Pulveriser grinding **LAKE GREEN COLOURS**. Capacity 110 lbs. per hour, fineness 99% minus 200 mesh.

One 12' dia. Raymond Air Separator handling 4 tons per hour of light **SODA ASH** and delivering a fine product of 94% minus 200 mesh.

One 8' dia. Raymond Air Separator producing 3000 pounds per hour of ground **BURNT LIME**, all passing 35 mesh.

One 3' dia. Raymond Air Separator handling 10 hundredweights per hour of **SILICA** Dust and delivering 99.5% minus 100 mesh fine product.



**BRITISH BUILT  
THROUGHOUT**



**MINING & INDUSTRIAL EQUIPMENT LTD**

ASSOCIATED WITH — INTERNATIONAL COMBUSTION LTD

11, Southampton Row, London, W.C.1.

Works: Derby & Erith.



Telephone:  
Holborn 7277 (3 lines)

Telegrams and Cables:  
Hardraymil Westcent London.



(Continued from page 504.)

**SODIUM CARBONATE (SODA CRYSTALS).**—SCOTLAND: £5 to £5 5s. per ton ex quay or station. Powdered or pea quality 7s. 6d. per ton extra. Light Soda Ash £7 ex quay, min. 4-ton lots with reductions for contracts.

**SODIUM CHLORATE.**—2½d. per lb. LONDON: £29 per ton. \*£32 10s. MANCHESTER: £29.

**SODIUM CHROMATE.**—3½d. per lb. d/d U.K.

**SODIUM HYPOSULPHITE.**—SCOTLAND: Large crystals English manufacture £9 5s. per ton ex stations, min. 4-ton lots. Pea crystals £15 ex station 4-ton lots. MANCHESTER: Commercial, £9 5s.; photographic, £15.

**SODIUM NITRITE.**—Spot £19 to £22 per ton d/d station in drums.

**SODIUM PERBORATE.**—LONDON: 10d. per lb.

**SODIUM PHOSPHATE.**—£13 to £15 per ton f.o.r. London casks free. LONDON: Dibasic, £13 per ton. MANCHESTER: £13 10s.

**SODIUM PRUSSIAN.**—LONDON: 5d. to 5½d. per lb. SCOTLAND: 5d. to 5½d. ex store. MANCHESTER: 5d. to 6d.

**SODIUM SILICATE.**—140° Tw. Spot £8 5s. per ton d/d station returnable drums.

**SODIUM SULPHATE (GLAUBER SALTS).**—£4 2s. 6d. per ton d/d. SCOTLAND: English material £3 15s.

**SODIUM SULPHATE (SALT CAKE).**—Unground Spot £3 15s. per ton d/d station in bulk. SCOTLAND: Ground quality, £3 5s. per ton d/d. MANCHESTER: £3 2s. 6d.

**SODIUM SULPHIDE.**—Solid 60/62% Spot £10 15s. per ton d/d in drums. Crystals Spot £7 15s. per ton d/d in casks. SCOTLAND: For home consumption, Solid 60/62%, £10 5s.; broken 60/62%, £11 5s.; crystals, 30/32%, £8 2s. 6d. d/d buyer's works on contract, min. 4-ton lots. Spot solid 5s. per ton extra. Crystals, 2s. 6d. per ton extra. MANCHESTER: Concentrated solid, 60/62%, £11 5s.; commercial, £8.

**SODIUM SULPHITE.**—Pea crystals spot, £13 10s. per ton d/d station in kegs. Commercial spot £9 10s. d/d station in bags.

**SULPHATE OF COPPER.**—MANCHESTER: £17 10s. to £18 per ton f.o.b.

**SULPHUR.**—£12 5s. to £15 15s. per ton. SCOTLAND: Flowers, £12 10s.; roll, £12 10s.; rock, £9. Ground American, £12 ex store.

**SULPHUR CHLORIDE.**—5d. to 7d. per lb., according to quality.

**SULPHUR PRECIP.**—B.P. £55 to £60 per ton according to quantity. Commercial, £50 to £55.

**VERMILION.**—Pale or deep, 6s. 4d. per lb.

**ZINC CHLORIDE.**—SCOTLAND: British material, 98%, £18 10s. per ton f.o.b. U.K. ports.

**ZINC SULPHATE.**—LONDON and SCOTLAND: £12 per ton.

**ZINC SULPHIDE.**—1s. to 1s. 2d. per lb.

### Pharmaceutical and Fine Chemicals

The following changes in price are reported:—

**AMMONIUM BENZOATE.**—3s. 3d. per lb.

**BENZONAPHTHOL.**—3s. 3d. to 3s. 9d. per lb.

**HEXAMINE.**—2s. 6d. to 2s. 10d. per lb.

**PHENACETIN.**—5s. 4d. to 5s. 7d. per lb.

**SODIUM BENZOATE, B.P.**—1s. 6d. per lb.

**THYMOL, PURISS.**—5s. 9d. to 6s. 6d. per lb.

### Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:—

**ACID, BENZOIC, B.P. (ex Toluol).**—1s. 9½d. per lb.

**ACID, GAMMA.**—Spot, 4s. per lb. 100% d/d buyer's works.

**ACID H.**—Spot, 2s. 4½d. per lb. 100% d/d buyer's works.

**ACID, NEVILLE AND WINTHER.**—Spot, 3s. per lb. 100% d/d buyer's works.

**ACID, SULPHANILIC.**—Spot, 8d. per lb. 100% d/d buyer's works.

**ANILINE OIL.**—Spot, 8d. per lb., drums extra, d/d buyer's works.

**ANILINE SALTS.**—Spot, 8d. per lb. d/d buyer's works, casks free.

**BENZALDEHYDE.**—Spot, 1s. 8d. per lb., packages extra.

**BENZIDINE BASE.**—Spot, 2s. 5d. per lb. 100% d/d buyer's works.

**o-CRESOL 30/31° C.**—£2 6s. 5d. per cwt., in 1-ton lots.

**m-CRESOL 98/100%.**—2s. 9d. per lb., in ton lots.

**p-CRESOL.**—34.5° C.—1s. 9d. per lb., in ton lots.

**DICHLORANILINE.**—2s. 2d. per lb.

**DIMETHYLANILINE.**—Spot, 1s. 6d. per lb., package extra.

**DINITROBENZENE.**—8½d. per lb.

**DINITROTOLUENE.**—48/50° C., 8½d. per lb.; 66/68° C., 9d. per lb.

**DIPHENYLAMINE.**—Spot, 2s. per lb., d/d buyer's works.

**a-NAPHTHOL.**—Spot, 2s. 4d. per lb., d/d buyer's works.

**B-NAPHTHOL.**—Spot, £75 per ton in 1-ton lots, d/d buyer's works.

**a-NAPHTHYLAMINE.**—Spot, 11½d. per lb., d/d buyer's works.

**B-NAPHTHYLAMINE.**—Spot, 2s. 9d. per lb. d/d buyer's works.

**o-NITRANILINE.**—5s. 10d. per lb.

**m-NITRANILINE.**—Spot, 2s. 7d. per lb. d/d buyer's works.

**p-NITRANILINE.**—Spot, 1s. 8d. per lb. d/d buyer's works.

**NITROBENZENE.**—Spot, 6½d. per lb.; 5-cwt. lots, drums extra.

**NITRONAPHTHALENE.**—9d. per lb.

**SODIUM NAPHTHIONATE.**—Spot, 1s. 9d. per lb.

**o-TOLUIDINE.**—Spot, 9½d. per lb., drums extra, d/d buyer's works.

**p-TOLUIDINE.**—Spot, 1s. 9d. per lb., d/d buyer's works.

**m-XYLIDINE ACETATE.**—3s. 6d. per lb., 100%.

### Coal Tar Products

**ACID, CARBOLIC (CRYSTALS).**—5½d. to 6½d. per lb. Crude, 60s 1s. 5½d. to 1s. 6½d. per gal. SCOTLAND: Sixties, 1s. 7d. to 1s. 8d.

**ACID, CRESYLIC.**—99/100, 1s. 7d. per gal.; B.P., 2s. to 2s. 2d.; Refined, 1s. 9d. to 1s. 11d.; Pale, 98%, 1s. 6d. to 1s. 7d.; Dark, 1s. 4d. to 1s. 4½d. LONDON: 98/100%, 1s. 6d. Dark 95/97%, 1s. 4d. SCOTLAND: Pale 99/100%, 1s. 3½d. to 1s. 4½d.; 97/99%, 1s. 1½d. to 1s. 2½d.; dark 97/99%, 1s. 0½d. to 1s. 1½d.; high boiling acid, 2s. 6d. to 3s.

**BENZOL.**—At works, crude 7d. to 7½d. per gal. Standard motor, 1s. 2d. to 1s. 3d.; 90%, 1s. 3d. to 1s. 4d. Pure, 1s. 6d. to 1s. 7d. LONDON: Motor, 1s. 5½d. SCOTLAND: Motor, 1s. 3½d. to 1s. 4½d.; 90%, 1s. 9½d. to 1s. 10½d.

**CREOSOTE.**—Standard for export, 4½d. to 5d. nett per gal. f.o.b. for Home, 3½d. d/d. LONDON: 3d. to 3½d. f.o.r. North; 4d. to 4½d. LONDON. MANCHESTER: 4d. to 5d. SCOTLAND: Specification oils, 3½d. to 4½d.; washed oil, 4d. to 4½d.; light, 3½d. to 4½d.; heavy, 4½d. to 5d.

**NAPHTHA.**—Solvent, 90/160, 1s. 4d. to 1s. 5d. per gal.; 95/160, 1s. 4½d.; 90/190, 1s. 1d. to 1s. 2d. LONDON: Solvent, 1s. 1½d. to 1s. 2d.; heavy, 11d. to 1s. 0½d. f.o.r. SCOTLAND: 90/160, 1s. 3d. to 1s. 3½d.; 90/190, 1s. 1d. to 1s. 2d.

**NAPHTHALENE.**—Purified crystals, £9 10s. per ton in bags. LONDON: Fire lighter quality, £3 to £3 10s.; 74/76 quality, £4 to £4 10s.; 76/78 quality, £5 10s. to £6. SCOTLAND: 40s. to 50s.; whizzed, 65s. to 70s.

**PYRIDINE.**—90/140, 3s. 9d. per gal.; 90/160, 4s. to 4s. 6d.; 90/180, 2s. to 2s. 6d. SCOTLAND: 90/160%, 4s. to 5s.; 90/220%, 3s. to 4s.

**REFINED COAL TAR.**—SCOTLAND: 5d. to 5½d. per gal.

**TOLUOL.**—90%, 2s. 2d. per gal.; Pure, 2s. 7d.

**XYLOL.**—1s. 9d. per gal.; Pure, 1s. 11d.

### Wood Distillation Products

**ACETATE OF LIME.**—Brown, £8 per ton. Grey, £12. Liquor, 8d. to 9d. per gal. MANCHESTER: Brown, £7 5s.; grey, £11.

**ACETIC ACID, TECHNICAL, 40%.**—£16 15s. to £17 15s. per ton.

**ACETONE.**—£63 to £65 per ton.

**AMYL ACETATE, TECHNICAL.**—95s. to 100s. per cwt.

**CHARCOAL.**—£7 10s. to £11 per ton.

**IRON LIQUOR.**—24°/30° Tw., 10d. to 1s. 2d. per gal.

**WOOD CREOSOTE.**—1s. to 2s. 6d. per gal., unrefined.

**WOOD NAPHTHA, MISCIBLE.**—3s. to 4s. per gal. Solvent, 3s. 9d. to 4s. 9d. per gal.

**WOOD TAR.**—£2 10s. to £6 per ton.

**BROWN SUGAR OF LEAD.**—£32 per ton.

### Latest Oil Prices

LONDON, May 25.—LINSEED OIL was easier. Spot (small quantities), £16; June, £12 17s. 6d.; July-Aug., £13 5s.; Sept.-Dec., £13 17s. 6d.; Jan.-April, £14 12s. 6d. per ton, naked. RAPE OIL was inactive. Crude, extracted, £28 10s.; technical refined, £30 10s. per ton, naked, ex wharf. COTTON OIL was slow. Egyptian, crude, £19; refined common edible, £22; and deodorised, £24 per ton, naked, ex mill. TURPENTINE was quiet. American, spot, 59s.; June 58s. 6d. per cwt.

HULL.—LINSEED OIL.—Spot, £13; May, £12 7s. 6d.; June, £12 10s.; July-Aug., £12 15s.; Sept.-Dec., £13 7s. 6d., and Jan.-April, £14 2s. 6d. per ton. COTTON OIL.—Egyptian, crude, spot, £18 15s.; edible refined, spot, £20 10s.; technical, spot, £20 10s.; deodorised, £23 5s. per ton, naked. PALM KERNEL OIL.—Crude, f.m.q., spot, £21 per ton, naked. GROUNDNUT OIL.—Crushed-extracted, spot, £32 10s.; deodorised, £36 10s. per ton. RAPE OIL.—Crushed-extracted, spot, £27 10s.; refined, £29 per ton. SOYA OIL.—Crushed-extracted, spot, £20; deodorised, £23 per ton. COD OIL, 16s. 6d. per cwt. TURPENTINE.—American, spot, 60s. per cwt. CASTOR OIL.—Pharmacy, spot, 42s. 6d.; first, 37s. 6d.; second, 32s. 6d. per cwt.

### Company News

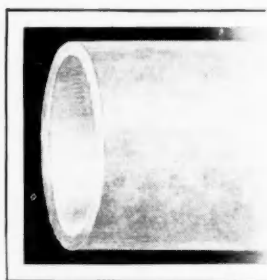
**NORTH BROKEN HILL, LTD.**—A dividend of 1s. 6d. per share (7½ per cent.) is announced, payable on June 30.

**DORMAN, LONG AND CO.**—The directors have decided to defer the payment of the usual dividend on the 6 per cent. cumulative preference shares. The dividend on the £883,918 6 per cent. preference capital is paid to September 30, 1930. No dividend has been paid on the £2,052,746 8 per cent. non-cumulative preferred capital since 1923-24.

**NITRATE PRODUCERS' STEAMSHIP CO., LTD.**—A final dividend of 5 per cent. is recommended in the report for the year to April 30 last, which brings the total distribution up to 7½ per cent., tax free, for the year. The profits were £43,351, compared with £53,670 in 1930-31, and after placing £30,000, which includes £17,000 from insurance fund, to depreciation reserve, £15,732 is carried forward.

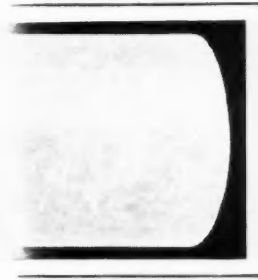
\* Prices quoted by other manufacturers.

# REDUCTION IN PRICE OF VITREOSIL COMBUSTION TUBES



By standardising the sizes of glazed VITREOSIL combustion tubes, we have been able to effect important economies in their production.

We are pleased to announce that the new prices of STANDARD SIZES represent a reduction of about  $33\frac{1}{3}\%$ .



**VITREOSIL combustion tubes and boats are known and appreciated throughout the world for their reliability and uniform quality.**

*Further particulars of these tubes, and the above STANDARD SIZES and prices, from all dealers or from the sole manufacturers:*

**THE THERMAL SYNDICATE LTD.**  
**Vitreosil Works**  
**WALLSEND-ON-TYNE**

*Established over a quarter of a century*

London depot: THERMAL HOUSE, OLD PYE STREET, S.W.1

## Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

### Mortgages and Charges

[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an \*—followed by the date of the Summary, but such total may have been reduced.]

**ANGLO CONTINENTAL GUANO WORKS, LTD.,** London, E. (M., 28/5/32.) Registered May 10, Trust Deed dated May 6, 1932 (supplemental to Trust Deed, dated Feb. 6, 1923, under which £198,850 debenture stock is outstanding); charged on 1,000,000 ordinary shares of 1s. each in Genatosan, Ltd. \*£224,170. Dec. 22, 1931.

**BLOOMDALE CHINA CLAY CO., LTD.,** London, E.C. (M., 28/5/32.) Registered May 11, series of £3,000 (not ex.) debentures, present issue £500; general charge. \*Nil. July 10, 1931.

**BRITISH INDESTRUCTO GLASS, LTD.,** London, E.C. (M., 28/5/32.) Registered May 10, £7,500 (not ex.) debentures (ranking in priority to 2nd debentures dated July 1, 1931), to A. N. D. Smith, 10 Arthur Street, E.C.; charged on Factory 30, Factory Chase Estate, Park Royal, also general charge. \*£16,750. October 24, 1931.

**CEMENT INDUSTRIES, LTD.,** London, S.W. (M., 28/5/32.) Registered May 13, £3,600 debentures, part of amount already registered; general charge.

**LOMPRET CEMENT WORKS, LTD.,** London, W.C. (M., 28/5/32.) Registered May 4, series of £100,000 (not ex.) debentures; present issue £10; general charge.

**LYND (WILLIAM) AND CO. (1920) LTD.,** Leeds, oil refiners. (M., 28/5/32.) Registered May 13, mortgage, to Midland Bank Ltd. securing all moneys due or to become due to the Bank; charged on 18, 22 and 24 Dock Street and property in Bowman Lane, Leeds, etc. \*£10,959. Nov. 23, 1931.

**PALMER MANN AND CO., LTD.,** London, E.C., salt manufacturers. (M., 28/5/32.) Registered May 9, debentures, to Union Bank of Manchester, Ltd., securing all moneys due or to become due to the Bank; general charge. \*Nil. Sept. 29, 1931.

**REYNOLDS (T. A.), SON AND CO., LTD.,** London, E.C., scientific instrument makers. (M., 28/5/32.) Registered May 10, £2,000 debentures; general charge. \*Nil. Mar. 11, 1931.

**UNIVERSAL CELLULOSE AND PAINT SPRAYING CO., LTD.,** London, N.W. (M., 28/5/32.) Registered May 6, £500 debentures to Mrs. A. B. M. Bell, 81b Oxford Gardens, London; general charge.

**VICTORIA MARGARINE WORKS, LTD.,** London, N.W. (M., 28/5/32.) Registered May 10, debentures to Barclays Bank, Ltd., securing all moneys due or to become due to the Bank; general charge.

### Satisfaction

**ASHBROOKS (1920) LTD.** (old co.), Manchester, chemical manufacturers. (M.S., 28/5/32.) Satisfaction registered May 9, all moneys, etc., registered May 12, 1921.

### County Court Judgment

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

**BODDEN, REGINALD,** 44 Duchy Road, Harrogate, chemical manufacturer. £49 5s. 2d. April 8.

### Company Winding-up Voluntarily

**WYCOMBE DRUG CO., LTD.** (C.W.U.V., 28/5/32.) By reason of its liabilities, May 9. Mr. Augustus Granville White, 73 Cheap-side, E.C.2, appointed liquidator.

## Forthcoming Events

**June 1.**—Society of Public Analysts. 8 p.m. Burlington House, Piccadilly, London.

**June 3.**—The Physical Society of London and The Optical Society. A Joint Discussion on "Vision." 2.30 p.m. Imperial College of Science and Technology, South Kensington.

**June 3.**—Royal Institution. "Electrical Conductivity of Metals at the Lowest Temperatures." J. C. M'Lennan. 9 p.m. 21 Albemarle Street, London.

## New Companies Registered

**BRITISH NITROLAC COMPANY, LTD.,** Princes Road, Merton, Surrey. —Registered May 24. Nominal capital £4,000 in £1 shares. Manufacturers of and dealers in varnishes, paints, enamels, japans, distempers, fine colours and chemicals, colour grinders, manufacturers of nitro-cellulose lacquers and cellulose products and by-products. Directors: V. C. Morgan, J. T. Keep.

**FRICKER'S METAL AND CHEMICAL CO., LTD.,** Norfolk House, Laurence Pountney Hill, London, E.C.—Registered as a "public" company on May 9. Nominal capital £300,000 in 50,000 8 per cent. cumulative preference and 250,000 ordinary shares of £1 each. The objects are to acquire the whole or any part of the assets, liabilities and undertaking of Fricker's Metal Co., Ltd., (now in liquidation), to enter into agreements with the said old company and the liquidator thereof, and the Imperial Smelting Corporation, Ltd., and to carry on the business of roasters, smelters, refiners, rollers, galvanisers and manufacturers of and dealers in zinc, lead, titanium and other ferrous and non-ferrous ores and other metals and all by-products thereof, manufacturing chemists. Directors: Lindsay Scott, W. S. Robinson, L. B. Robinson.

**NORTHERN COUNTIES LABORATORY, LTD.**—Registered May 18. Nominal capital £6,000 in £1 shares (3,000 "A" and 3,000 "B"). To promote and conduct research work and any other scientific work in connection with the analysis, study, mining, production, treatment and utilisation of coal, cannel and coke and tar, oil, petroleum, gas and all or any by-products and residual products, etc. A subscriber: H. N. Sporborg, 18 Austin Friars, London, E.C.2.

**ATOHL PETROLEUM PRODUCTS, LIMITED,** 80 Bishopsgate, London, E.C.2.—Registered May 23. Nominal capital, £1,000 in £1 shares. Manufacturers of and dealers in petroleum, lubricating oils, greases and other oils (except essential oils), bitumen, asphalt, tar, tar distillates, methylated spirits, etc. Directors: A. S. Whetnall, F. J. Aspinwall.

**TALISMAN WORKS, LTD.,** Registered in Dublin, April 22. Nominal capital £1,000 in £1 shares (500 ordinary and 500 participating preference). Chemical manufacturers, etc. A subscriber: Mrs. G. F. Richardson, 25 Idrome Terrace, Blackrock, Co. Dublin.

## New Chemical Trade Marks

Opposition to the Registration of the following Trade Marks can be lodged up to June 11, 1932.

**Androgin.** 531,051. Class 3. Chemical substances prepared for use in medicine and pharmacy. Society of Chemical Industry in Basle 141 to 227 Klybeckstrasse, Basle, Switzerland. April 14, 1932.

**Arsenobillon.** 530,168. Class 3. Chemical substances prepared for use in medicine and pharmacy. May and Baker, Ltd., Garden Wharf, Church Road, Battersea, London, S.W.11. March 12, 1932. The entry on the Register of Nos. 413,809-10 will be cancelled if and before this Mark is registered.

**Dehagen.** 530,926. Class 1. Chemical substances for mordanting, fixing, dispersing and softening purposes in the dyeing and printing of textile fibres and fabrics. Durand and Huguenin, Aktien-Gesellschaft (a Joint Stock Company organised under the laws of Switzerland), Fabrikstrasse 40, Basle, Switzerland. April 11, 1932.

**Hystabol.** 530,736. Class 1. Chemical substances for use in the treatment of textile fabrics and leather in the course of their manufacture. H. Th. Böhme Aktiengesellschaft (a Joint Stock Company organised under the laws of Germany), 29 Moritzstrasse, Chemnitz, Germany. April 5, 1932.

**Novarsenobillon.** 530,169. Class 3. Chemical substances prepared for use in medicine and pharmacy. May and Baker, Ltd. March 12, 1932. The entry on the Register of Nos. 413,809-10 will be cancelled if and before this Mark is registered.

**Trawiskale.** 530,883. Class 1. A preparation or composition for preventing or removing scale or impurities from steam boilers or radiators. Arthur John Wilson, 18 John Gate, Bradford, Yorkshire. April 9, 1932.

## Chemical Trade Inquiries

Abstracted from the "Board of Trade Journal." Names and addresses may be obtained from the Department of Overseas Trade (Development and Intelligence), 35 Old Queen Street, London, S.W.1 (quote reference number).

**EGYPT.**—The Egyptian Ports and Lighthouses Administration is calling for tenders, to be presented in Alexandria by June 30, 1932, for the supply of paints, dry colours, whiting, soap, tar, etc. (Ref. B.X. 7330.)

**NORWAY.**—A firm of agents, established at Bergen, wishes to obtain the representation of United Kingdom exporters of refined sugar on a commission basis. (Ref. No. 923.)

**SOUTH AFRICA.**—The South African Railways and Harbours Administration is calling for tenders (Tender No. 2037), to be presented in Johannesburg by July 18, for the supply of enamels. (Ref. B.X. 7332.)



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